CITY OF GREATER BENDIGO:
DESIGN CHARRETTE 01

This report is prepared for:
Victorian Centre for Climate Change Adaptation
Rod Keenan
Director

City of Greater Bendigo
Prue Mansfield
Director Planning and Community Development

City of Greater Bendigo - Design Charrette 01 Report
Issue: 20 December 2011
Version: DRAFT

Authors:
Rob Roggema, Dr Roger Jones, Agnes Soh, Dr Stephen Clune, Shae Hunter, Anna Barilla, Zhipeng Cai, Jing Tian and Justin Walsh

for the project:
Design-led Decision Support for Regional Climate Adaptation
Integrating biophysical, ecological and community considerations.

Project team:
Rob Roggema
Centre for Design, RMIT University

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1:20:00

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preface

The design-led decision support for regional climate adaptation project builds on the participating regional councils for their support and willingness to be part of the project. Climate change and its impacts are to a certain extent uncertain and this is valid for this project also. The approach to organise design charrettes represents this, because in the format of design charrettes there is room to experiment, adjust the process when circumstances change and apply new information whenever available. However, dealing with these uncertainties implies dealing with a certain risk the outcomes will not be as expected. This requires courage of the council that hosts the design charrette. This is especially valid for the first charrette. Therefore, the City of Greater Bendigo deserves all the credits for supporting enthusiastically the initiating, organisation en execution of the first design charrette.

In dealing with the impacts of climate change the solutions are diverse and may change over time. A well-engineered solution for the problem is therefore mostly not satisfying. The solutions are multi-dimensional and require combinations of solutions for each of the parts. This requires agility in the mindset of the designers. The use of several methods to design a desired future for a climate proof Bendigo, whether the use of a camera, pencils and maps or plasticine was required, added to this ability. We have been very lucky that all participants showed this agility during the design charrette.

We look back at an intense and exciting design process, in which innovative solutions have been proposed and we look forward to continue the conversation in the second design charrette in Bendigo.

A special thank you is appropriate for Prue Mansfield as our main contact in Bendigo, who has supported this event to happen and helped us to put together the right group of participants, provided us with the right background material and gave us feedback on the process and program.

On behalf of all the members in the project team, I would like to thank all participants in the Bendigo Design Charrette for their contributions!

Rob Roggema
Project Manager
Design-led Decision Support for Regional Climate Adaptation
Centre for Design, RMIT University
20 December 2011

introduction

> “ If I said to a three-year old, ‘I want you to build a hotel,’ they wouldn’t say, ‘Hang on, there’s no steel girders.’ They’d just get cardboard and pencils and do it. ”

To capture the spirit of the Bendigo Charrette, which took place on 17 and 18 November 2011, this quote of Dave Stewart (The Eurythmics) in “The Age” (18 November 2011) says it all.

The message for every region in Victoria is to develop in a way that meets the challenge of global warming. The increase of flood and bushfire risk, droughts and heat-waves, demands urgent attention and strategies to deal with these inevitable changes. The challenge for the Bendigo design charrette was to identify those revised design and planning policies through the development of design principles that minimise the impact of climate change to the well-being of future generations.

This challenge has been formulated in the design brief as follows: **“To develop a range of future scenarios, which all sketch a future image of the City of Greater Bendigo providing a community that is safe, sustainable and resilient”.**

“Bringing knowledge to life”

Climate change is often seen as a threat, bringing risks to landscapes and people. This is one of the reasons why, in dealing with climate adaptation, the focus often lies on gaining more scientific knowledge and on conducting risk and vulnerability assessments. Does all this knowledge gathering lead to an increased adaptive capacity in regional Victoria? We suggest an approach that involves gaining and storing knowledge with a focus on optimal use of this knowledge.

This approach bypasses discussions or questions about whether climate change is ‘real’ or caused by humans. We take the estimated population growth and economic development for the Bendigo area as a starting point. Our intention is to design a regional plan, which anticipates future weather events and climate change, for the City of Greater Bendigo, given the facts and parameters of the region. In moving beyond a debate around science and knowledge we offer a design process that takes the available knowledge, both scientific and policy driven, and bring this knowledge to life to create and imagine a climate adaptive future for Bendigo.

A design charrette will allow us to develop these creative solutions. Charrettes are intensive and creative multi stakeholder design workshops that occur over multiple days. They allow for the development of solutions that may occur outside of regular policy processes of recent date and give participants the opportunity to think outside the box to envision ‘unthinkable futures’. Such characteristics, common to charrettes, are ideal for problems that are unclear, complex and long-term. Climate adaptation is one of these problems.

The year 2050 will be used as our planning horizon, to reflect the long time periods over which many effects of climate change will become manifest appear be realised.

The Design-led Decision Support for Regional Climate Adaptation project will work with the following assumptions for the Bendigo area:

- Higher temperatures;
- More severe floods;
- Longer droughts;
- Higher likelihood of bushfires;
- Providing 23,000 new houses until 2050

the design charrette

The term 'charrette' originated from France. At the end of the nineteenth century the Architectural Faculty of the Ecole des Beaux-Arts issued problems that were so difficult few students could successfully complete them in the time allowed. As the deadline approached, a pushcart (or charrette in French) was wheeled past students' work-spaces in order to collect their final drawings for jury critiques while students frantically put finishing touches on their work. To miss 'the charrette' meant an automatic grade of zero. Charrettes are successfully used in the most controversial and complicated design and planning problems. Examples of these, as given by the NCI (National Charrette Institute) include[1] [Lennartz and Lutzenhiser, 2006]:

- High stakes projects involving substantial public and private investment;
- Volatile yet workable political environments – situations that are 'hot' but manageable;
- Complex design problems;
- Real projects that include imminent development.

The NCI defines the charrette as: "a collaborative design and planning workshop that occurs over four to seven consecutive days, is held on-site and includes all affected stakeholders at critical decision-making points" [Lennertz and Lutzenhiser, 2006]. Building on this Condon formulates it as: "a time-limited, multiparty design event organised to generate a collaborative produced plan for a sustainable community" [2008].

A typical charrette is seen as part of a dynamic planning process, which starts with the preparation phase, followed by the charrette and finishes with the implementation phase. The process, as derived from both Condon [2008] and Lennartz and Lutzenhiser [2006], consists of the following phases:

The first phase we distinguish is the **preparation phase**. In this phase everything that is required to hold a successful design charrette is taken care of. Besides the obvious, required material, booking the venue etcetera, the main issues in the preparation phase are the design brief and the selection of participants. In the design brief the assignment is clearly defined. The goals and objectives, design principles, if possible the quantitative requirements and the performance targets are all described and collected. Selecting the right 'mix' of people to participate is essential. A combination of scientists, local experts and stakeholders, decision makers and knowledge brokers, designers and technical experts, all contribute to the dynamism of the event.

The second phase consists of the **visioning charrette**. During this charrette the main goal is to envision the desired future. A typical visioning charrette includes the following parts: an opening event, a site tour, the design stages, during which iterative phases of conceptualisation, drawing alternatives and refinement of the vision take place (or in the words of Condon [2008]: "talk-doodle-draw"), the public meetings and finally the after-party. In general, this type of charrette involves (mainly) designers for a full week. The purpose is to shift from attractive sounding prospects to real solutions, which, in this phase, are represented in designs. During the charrette a common language for solutions is developed and, because no implementation questions will be raised at this stage, the risk ideas will be rejected is minimal. However, it may be expected that, in the openness of the process several policy contradictions will be revealed.

The third phase is the **implementation charrette**. This charrette typically lasts for four days and involves (mainly) design facilitators and stakeholders. Its aim is to develop a shared understanding of the desired future and what is needed to realise this future. This method also addresses some of the barriers to change that exist in many governmental organisations (the so-called 'window-of-no'). This prevents change from happening and is often well established through unwritten codes and invisible agreements. The implementation charrette is a powerful tool to go past this window of no. The fast and efficient charrette process involves stakeholders in a powerful integrative way. The connection of participants of the charrette, who in their regular work are probably not connected helps to embed the solutions brought up in the charrette process, which may help to outpace the approval processes, which can take years.

The final phase we distinguish is the writing of the **charrette report**. In the report the results of the charrette are presented visually and with clarity. The report functions as the 'contract' for the participants and may be used in formal decision making processes.

In conducting design charrettes Condon [2008] defines nine general rules for a good process. The four we acknowledge as the most significant are highlighted here:

1. Design with everyone: Despite the fact that becoming a designer requires thorough training and very specific skills, the design process as undertaken during charrettes is integrative and contains a variety of possible solutions. This is partly an intuitive and judging activity, which makes it accessible for many individuals. In this sense, everyone is a designer;
2. Start with a blank sheet: If the group of participants are standing around the table, on which a large map of the site is laid down, the simple action to overlay this map with a blank piece of transparent paper. The invitation and the challenge are then before all. Everyone is invited to fill in the future and a shared vision will, in the hours to follow, fill up the formerly empty paper;
3. Provide just enough information: Too much information causes decision paralysis and too little produces bad proposals. Just enough is mainly arranged through the expertise of the participants and will be provided during the charrette in a concise and easy to grasp way (maps, schemes);
4. Drawing is a contract: All drawings produced during the charrette embody the consensus as experienced and achieved by the charrette team. They form a well-understood agreement, or contract, in images amongst the group. The drawings cannot be broken without consent of the group and function as such as a very strong commitment.

In this project we define design charrettes as: "two or more day intensive design workshops in which a mixed group of participants work collaboratively towards designing climate adaptation future scenarios." A design charrette:

1. Integrates intuitive, rational and emotional knowledge;
2. Is an inventive approach, includes idea-generating forces and results in envisioning futures;
3. Is set up in a creative atmosphere to allow many different stakeholders to collaborate;
4. Alternates between plenary discussions and small mixed design teams to provide a creative environment to think about the future in unlimited ways;
5. Creates an environment in which out-dated frameworks, often related to individual beliefs or 'silo-ed' policies, can be overcome;
6. Makes use of maps and other visual tools to allow people to collaborate and integrate topographical, ecological as well as social and economic aspects.

The way design charrettes are organised help to create an atmosphere that differs from regular and day-to-day working environments. This environment is created because it allows people to enter a different mind-set and use a broad variety of ideas, values and habits. The charrette process offers participants the following:

- Participate in a creative way to think about the future;
- Use risk assessment data in a creative way in order to develop ideas about responses to risks;
- Develop design ideas which are based on the uncertainty and unpredictability of climate change;
- Speculate about future change and ways of living:
- Open their minds and their conversations, which not necessarily take place within settled structures and habits in government or elsewhere;
- Work in a "bottom-up" way and take local knowledge and local climate perceptions into account in designing and decision making;
- Collaborate across disciplines, organisations and levels of government;
- Share responsibilities.

Charrette objectives:

1. Bring together 'champions' in the field of adaptation planning, spatial planning and spatial design to explore possible futures for the City of Greater Bendigo using a 2050 time-horizon. These futures aim to interlink pathways towards more adaptive systems with spatial planning and design processes in an optimal way;
2. Launching the design-led VCCCAR project at different spatial scales;
3. Presenting stimulating reports to be used in other case studies and beyond;
4. Offering a multidisciplinary arena to identify and explore new issues relevant for the main focus of the project;
5. Bringing together team members of the different 'Design-Led' case study areas.

More specific objectives for the Bendigo case study include:

- Explore the specific but complex climate issues Bendigo area is facing;
- To discuss possibilities how the resilience of Bendigo can be improved;
- To create designs that reveal what a Bendigo, adapted to climate change, might look like;
- To develop ideas and strategies to increase the resilience of Bendigo in the face more extreme weather events.

the project:

Design-led Design Support for Regional Climate Adaptation

Project team:

Rob Roggema
Prof John Martin
Dr Ralph Horne
Prof Roger Jones
Dr Stephen Clune
Shae Hunter
Agnes Soh
Julia Werner

The Victorian Centre for Climate Change Adaptation Research (VCCCAR), which was established in 2009 and is funded by Victorian Government, aims to improve government and community understanding about the potential impacts of climate change and adaptation options. It does this through the funding of interdisciplinary and multi-institutional research projects, which address priorities identified by the Victorian Government. Climate change adaptation has become an important consideration when discussing future development trajectories for cities and regions in Victoria.

This connection between the required adaptation and the desired urban and regional spatial development has been the major driving force for the development of the research project "Design-led Decision Support for Regional Climate Adaptation" (Roggema et al 2010)1, which State Government departments, united in the VCCCAR Investment Panel, have agreed to fund. This project takes as a starting point the premise that knowing about possible hazards and assessing their risk is an important step in understanding and dealing with climate change, but it still doesn't give us answers yet how to design our landscapes and societies for it.

The aim of the project is to develop future visions in which the regions are more resilient to the impacts of climate change and are more capable of dealing with unforeseen (climate) events. The design of these future visions is undertaken in collaboration with a rich mix of participants including local stakeholders, state government representatives, designers and researchers. The project takes a new approach to climate change adaptation at the (sub-) regional scale by organising and conducting design charrettes, addressing the positively and optimistic framed question "What might a 'climate-proof' future look like?" instead of "How do we become resistant and protect ourselves against the impacts of climate change". The design charrettes will be conducted in three pilot regions across Victoria: City of Greater Bendigo, Swan Hill Rural City Council and Wellington Shire Council.

How we deal with change is often an underlying question that is not always addressed through policy and planning processes. If we, as a community and a landscape, are confronted with more complexity and more change, as societies under threat of climate change currently are, this leads to more variety in the way we experience our environment (Wierdsma, 1999)2. One way of reacting in such circumstances is, instead of returning to well-known procedures' of the same' kind, to introduce more variety and cherish diversity as a collective competence. When people are encouraged to allow for diversity in values, opinions and visions, this collective competence will dynamically emerge. It is learning by working and working by learning at the same time. This co-creation of change (Wierdsma, 1999)3 can be experienced in optimal form in design charrettes. In the charrette context a variety of people are brought together, maintaining their diversity in professional expertise as well as in their own values and visions. In a well-organised and directed process all individual competencies will emerge into a collective one, crystallised by the collective drive to design the desired future.

The following principles for dealing with complexity and change can be distinguished (after Wierdsma):

1. Revaluation of context specific knowledge of experience (local storytelling);
2. Learn to act without disappearance of existing plurality and diversity;
3. Organise for transactions (as the opposite of organise for positions). Order activities, focus on the contributions (of participants) and facilitate dealing with variety: balancing between stability and dynamic enhancing activities;
4. Self-organisation of units or teams and respect for their autonomy;
5. Create platforms for interactive processes;
6. Value the unidentified character of interactive processes and meaning creation;
7. Allow participants to construct, in interaction with each other, meaning creation and give reality significance;
8. The place where the result of ordering (e.g. minimising variety) appears is called the place of effort (Kooistra, 1988)2. Here, the entrance of participants to the process of creating meaning is blocked;
9. Processes of co-creation need to be accessible for all participants;
10. The process needs to be open and indeterminate, which can be organised through temporary workable arrangements. In the design charrette a variety of exercise types may provide this as 'specific conversation spaces'.

the bendigo charrette

a summary

Source:
'Planning with Plasticine'[1] (Jones 2011)

The Bendigo Region has many natural assets including a great climate, rolling hills and valleys, spectacular gold-fields flora and gold itself. It also has a number of vulnerabilities including fire-prone forests and grasslands, an intermittent water supply, declining agricultural production, the toxic legacies of gold mining and episodes of extreme heat. The region is growing fast. Something like 23,000 dwellings or more are expected to be built in the region by 2050.

The broad design problem addressed in the charrette is, "The current urban and peri-urban growth model is widely agreed to be unsustainable. Subdividing green-fields without due regard for the landscape's natural assets erodes those assets. If current and future risks are inadequately planned for, people are put at risk; especially if the hazards and the number of people exposed to those hazards change very quickly. Landscape planning is a tricky process and hard to get right."

The process of landscape planning is also hard to change. Current methods are locked-in at the institutional, economic and behavioural scale. Business as usual is extended into the future with an emphasis on minimizing errors that might occur after action has been taken and turned out to be wrong (so-called Type II errors). If no adaptation is undertaken, under climate change other errors occur: responses to anticipated change are insufficient (the Type I errors). These errors can be anticipated with high confidence but for various reasons tends to be overlooked. Time and again, conservative (risk-averse) attitudes to planning show a clear preference for making familiar mistakes, avoiding Type II errors, which involve new (unfamiliar) strategies. This maintains institutional lock-in, which is strengthened by narratives that appeal both on the personal and institutional level. The risk of committing Type I errors (the penalty of inadequate planning) seems remote to people, particularly if climate change is communicated as a gradual process with serious risks being decades away.

However, regional climate does not change gradually, following a curve, but looks more like a staircase (figure 1). Human-induced warming is non-linear: the analysis of temperature records indicates that under climate change, heat is being stored in the oceans surrounding Australia for decades before being released into the atmosphere in short bursts. This has an immediate impact both on temperature and rainfall. (Many other regions also show similar rapid changes). Impact risks can therefore shift quite rapidly. And, if regional population also changes rapidly, more people can be exposed to more frequent climate hazards in a relatively short time. A range of impact risks, including extreme heat, drought and fire danger, shifted to a more extreme state in South-eastern Australia from 1997–98 but this has not yet been widely recognised.

The historical changes presented included daily maximum temperatures above 35°C and 40°C and Forest Fire Danger Index (FFDI). Before and after 1996-97, days above 35°C rose from 10 to 14 and above 40°C rose from 0.7 to 2.4. Forest Fire Danger Index for Victoria rose by almost 40% and days of high fire danger or above by more than 40% over the

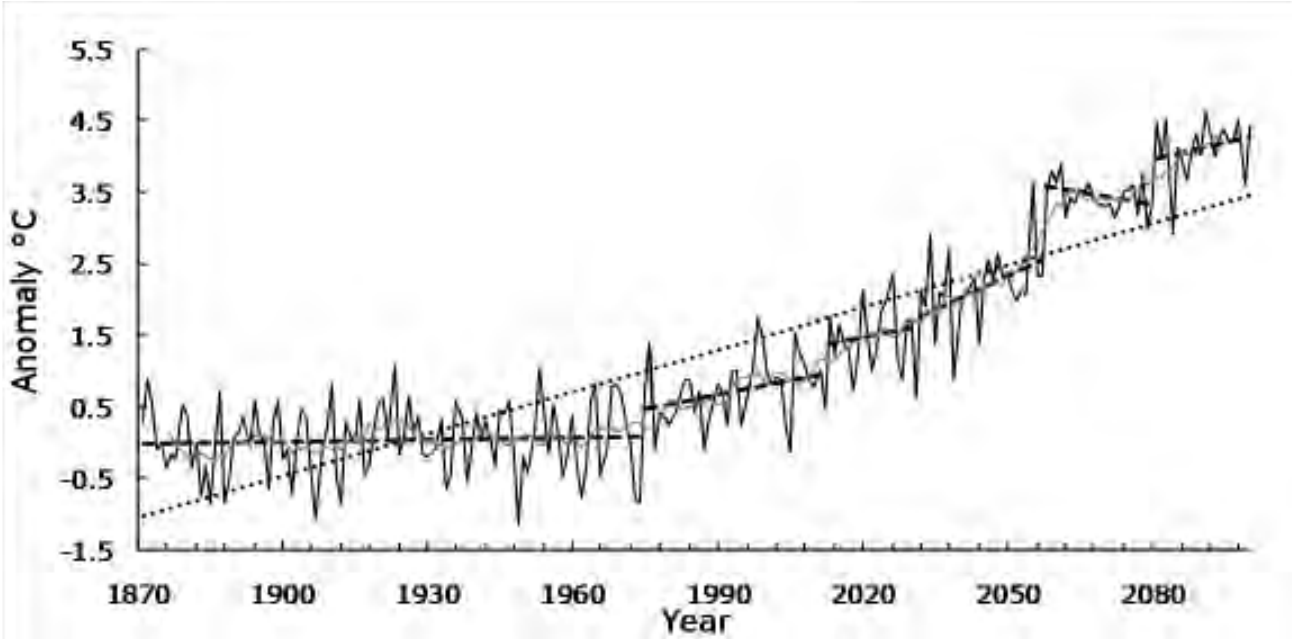


Figure 1. Staircase of human induced climate change.[2]
(Jones 2011)

same period. A scenario of a further shift in climate risks 2020 represents a plausible repeat episode coinciding with ongoing regional development and an increased regional population.

In the charrette the idea of flexible and creative adaptation planning was emphasised. The following diagram was presented (figure 2). Risk can be anticipated or reacted to, and adaptations can modify the environment or modify behaviour. For example, the Australian western tradition is to modify the environment in order to manage risk, whereas the indigenous tradition is to listen to the environment and modify behaviour. This diagram is used to suggest that a range of very different styles of adaptation are possible.

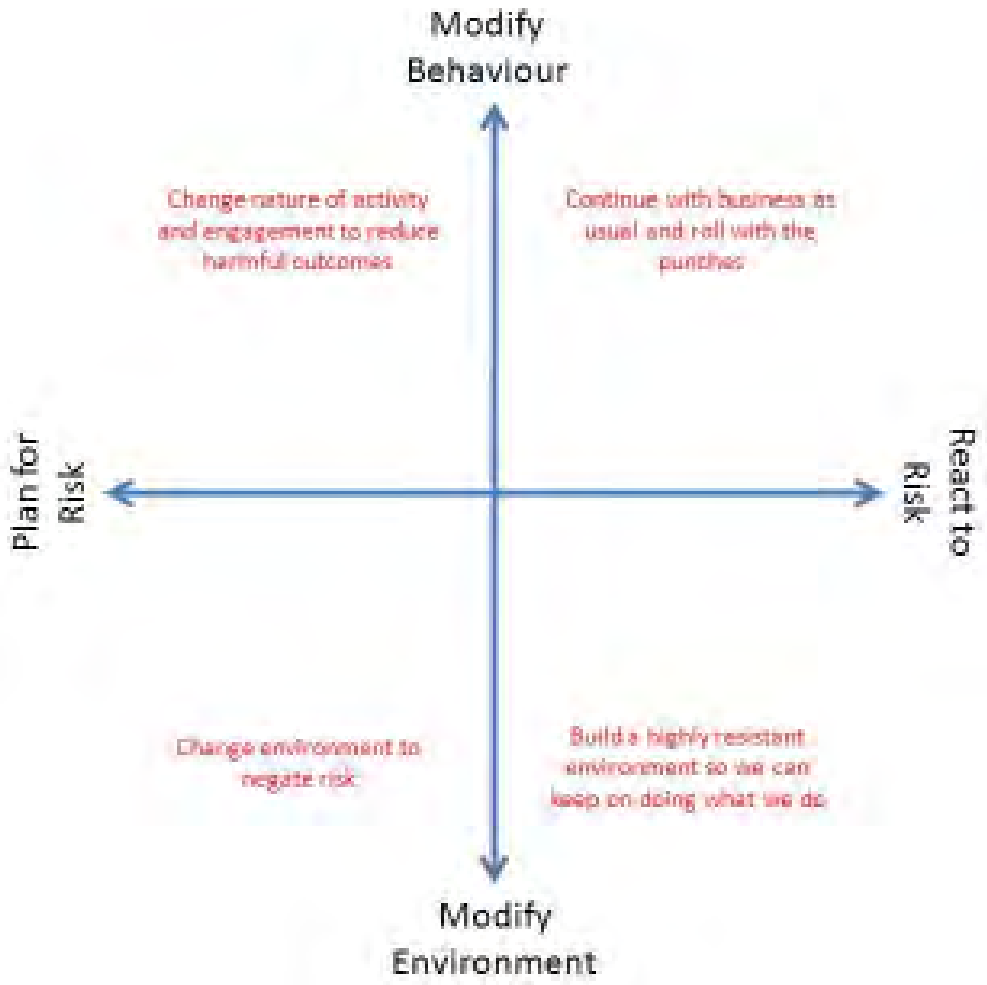


Figure 2. Diagram showing the different possible frames of climate change adaptation measures.[3] (Jones 2011)

Several group exercises were carried out using maps of the local area at small and large scale. Most people started off with current plans uppermost in their minds, making small modifications. As the workshop proceeded, the number of creative suggestions increased. People's horizons expanded as ideas bounced off each other. On the second day, four scenarios – one-line themes that had come up throughout the workshop – were proposed for a map-based exercise using plasticine to craft design elements. A set of design principles was developed for each scenario by the group before getting into the plasticine.

A range of innovative designs were proposed, which might not have happened if discussions stayed within the bounds of current plans. They blend an economic, social and environmental sensibility but in terms of regional development are very different to the current model of private housing–public infrastructure development, which occurs as a series of incremental decisions driven by commercial considerations. On the other hand, such plans need not be overly prescriptive if they are conceptually sound and should not be if they are to promote creativity. They would however, have to be designed to avoid people being unnecessarily exposed to increased fire risk, exposing vulnerable people to undue heat stress, allowing development to occur in flood prone areas, or carving up the environment to minimise risks.

key outcomes

During the two days of designing several common themes emerged:

1. Self-sufficiency + self-reliance

For many of the proposed settlements self-sufficiency and self-reliance were seen as key, but basic elements for living in this area. Self-sufficiency, the ability to supply their own needs with locally produced food, energy and clean water, is necessary in order to contribute to mitigating climate change and, more in general, to contrite to sustainability, but it is also a way of living, in which people become aware of the vulnerability of the environment they live in and become aware of alternative ways of living.
The self-reliance of a community, the ability of the community to respond and survive a potential hazard, is increasingly important under the staircase changes in climate as discussed before. If hazards, such as bushfires, floods or extended heat waves, become stronger, the services of State Emergency Services (SES) and other life-saving activities become less accountable and individual people and communities need therefore become more self-reliant.

2. Responsible & Active citizens

Over recent years citizens have become more and more passive. The 'government' is out there, taking care of everything and if something less beneficial happened, or in case of a disaster, the government is the easy-to-blame agency. However, it becomes clear that governmental institutions cannot guarantee a 100% safety arrangement for all of its citizens and therefore people need to be encouraged to become active and act as responsible citizens. This is even more important in the context of sudden unpredictable changes in climate. Amongst the responsibility of citizens are supporting each other in case of a disaster, jointly preparing and/or anticipating future change or disasters and take the responsibility to share common resources in difficult times.

3. Innovation

Future circumstances for our lives will be fundamentally different from the way we are used to live. This is nothing new. Imagine a world without a mobile phone, or without a computer and internet. These examples were not available 10-15 years ago and changed the way we live fundamentally. The i-Phone and i-Pad are even more recent innovations. If we go a bit further back in time, we used to live without the abundance of oil and natural gas to support our societal demands. This small number of examples illustrates that we always changed our lives, because humans invented new and better ways to live. The transformation towards a society which uses structurally less carbon resources and has to deal with the impacts of climate change at the same time will take place with subsequent, and probably at an increasing pace, set of innovations. These innovations will be at the household level, but, for the design of urban developments in the Bendigo area will also include urban development patterns, housing typologies/densities and the way green space can be integrated (next to, as part of or on top of buildings).

4. Identity

Bendigo is known as the old gold-mining town surrounded by forests. This is a historical connotation on the one hand side and a current one on the other side. Both are very valuable trade-marks for the city. However, to stick with these two might lead to a status quo, which is, on balance, a regression. A future identity might give Bendigo a new perspective to stay prosperous and unique. Possible identities that may be of use are: become the solar power centre, the safe and sustainable city or the city that is always prepared for change.

5. Density

Australian cities and towns are characterised by an ongoing sprawl into surrounding landscapes. This has two main effects. The first is that people increasingly live further away from the city centre, which requires them to drive longer distances to work or shopping. The second effect is that occupying the (sometimes very valuable landscapes) brings more people closer to higher risk areas (for flooding, bushfires, etc). Both effects cannot be characterised as sustainable or preferential. As common aim for Bendigo increasing building density has been supported, in order to minimise the effects described above. There are a couple of ways to intensify densities. The first way is to keep urban developments within current boundaries and no new developments will be realised outside the current city boundaries. Secondly, the existing boundary is reduced by a certain percentage and new developments need to fit within the new boundary. A third way of intensifying density is to shift the contour of Bendigo towards the east, creating a protection zone against bushfires in the west and keep the total area for urban uses at the same level (or possibly shrink it as well). This 'management of the boundary' requires innovative solutions for existing urban areas, retrofitting and new developments within existing neighbourhoods. The key assignment here is to design semi-urban dense concept for residential living, which also allows people to live near the natural landscape of bush and forests.

charette programme

The Greater Bendigo Design Charrette 01
was held at:
All Seasons Hotel
171-183 McIvor Road
Bendigo
VIC 3550
www.allseasonsbendigo.com.au

DAY 01// THURSDAY 17 NOVEMBER 2011

AM

0900 OPEN FOR COFFEE

0930 PLENARY OPENING
Setting the boundaries

Welcome
Ralphe Horne
Centre for Design, RMIT University

Current Spatial Policies and Development
Andrew Cockerall
City of Greater Bendigo Council

Bendigo and the Uniqueness of the Charrette
John Martin
La Trobe University

Climate, or: What Might Happen?
Roger Jones
Victoria University

The Design Charrette, The Boundaries and The Programme
Rob Roggema
Centre for Design, RMIT University

1030 MORNING TEA

1100 ASSIGNMENT 01:
APPETISER
Camera Images + Presentation
Work in a group of three people. Discuss, in 5 minutes, the selection of an object or a person in or outside the room you want to take a picture of. The picture needs to represent your major thought/concern regarding climate change impacts in Bendigo. The pictures will be collected after 10 minutes and each of the teams will have 2 minutes time to explain what the object is, why you've chosen this and how it relates to climate change impacts.

PM

1200 **KINDLE: DESIGN OF BUSHFIRE RESILIENT LANDSCAPES**
Presentation by RMIT Landscape Architecture students

Jarrad Newman
Ben Crisfield

1230 LUNCH

1400 ASSIGNMENT 02:
CRITICAL CLIMATE LANDSCAPES
Northern precinct
Southeastern precinct
Western precinct
We have selected three areas near the city of Bendigo that are critically vulnerable for the impacts of climate change. Two groups will design a climate resilient future for each of those areas. The assignment is to design a climate resilient future (2050) for the site, taking into account the local climate hazards as well as energy efficiency, the sprawl vs. density issue, water resource efficiency, rural living vs. existing agriculture and technological performance under climatic constraints and how these factors influence the spatial design. The result of this session needs to be presented (in 5 minutes) at the end of the day, on one design map and may be accompanied by reference images, drawings or other visuals.

The groups will be facilitated by one project team member: John, Roger, Ralph, Rob, Stephen and Che.

1530 AFTERNOON TEA

1600 ASSIGNMENT 03:
LANDSCAPE vs LOCAL
Greater Bendigo LGA
Huntly
Marong
Strathfieldsaye
In this assignment all participants are free to choose their own group. Potentially, three groups will work at the scale of the entire council (landscape, ecology, water-system, infrastructure, urban developments) and the other three groups will work each on one of the locally identified urban development sites (urban design level).

Landscape scale: The assignment for the landscape groups is to design a landscape-urban regional structure in which climate hazards, such as droughts, fires and floods are taken as the basis for an urban development strategy (e.g. where would you place the required 18.000 new houses and in what kind of typology, e.g. density, type of dwellings, etc.)?

Local scale: There will be three locations selected (Strathfieldsaye, Huntly and Marong) to design a future neighbourhood anticipating climate change impacts. These locations are the potential future urban development sites. The assignment is to design these locations in a way that they are resilient for climate impacts but are also flexible in order to be able to deal with unknown circumstances.

1700 PRESENTATIONS
Assignments 02 + 03
All groups x 5min presentations

1900 DINNER

AM
0900 ASSIGNMENT 04:
LANDSCAPE vs LOCAL
Greater Bendigo LGA
Huntly
Marong
Strathfieldsaye
In this design session the groups that were formed in the late afternoon on the first day will stay the same. The assignment is to take the results of the first day and scale up or down the results to more detailed levels or higher levels of scale. The three landscape groups will use their initial design proposals to detail these to one of the urban design sites. The local groups will use their propositions for the urban design sites to design solutions on the landscape level.

Landscape scale: Take the key design propositions on the landscape level and use them/translate them to one of the urban design sites. You may have used ecology, water system, or specific risk areas in your landscape designs. How do these qualities inform your design on a lower scale? What do specific elements of your landscape design mean for a climate resilient and flexible design at the urban design level?

Local scale: Take the assumptions that underlying your urban designs and use them to inform a structural design at the landscape level. What principles are capable of guiding the design at a higher level? How does the specific design proposal for your urban design site inform the design at the landscape level? Can these design proposals be translated to the landscape level?

1000 ASSIGNMENT 05:
PLANNING WITH PLASTICINE
If You Can't Stand the Heat...
The Scarcer the Water...
The Shining Heart of the State...
The Life Saver Region
Six specific driving forces, design directions, specific topics will be identified over the course of the charrette. Each one will have an appealing title and specific assignment formulated. Participants are free to join a group with the, to them, most interesting issue.

The assignment is to develop a clay-model, which demonstrates an integrated future spatial scenario for the City of Bendigo and its immediate surroundings. Take into account all information that you've been gathering over the last one and a halve day to come up with the 'best' future for Bendigo to anticipate future climate impacts. The scenario is integrated, which means that all elements that are spatially relevant need to be represented in the model: housing, infrastructure, industries, water, nature, forest, agriculture and recreational services. You may use the clay to identify topographical differences and and/or building heights.

PM
1200 PREPARATION FOR FINAL PRESENTATION
Prepare as a group a presentation (7 minutes) of your clay model in power-point in which you give insights in the following aspects of your design scenario: what is the main problem addressed, what are your (climatic) assumptions, description of the scenario and question for the future.

1230 LUNCH

0130 FINAL PRESENTATIONS

0300 EVALUATION: WHAT IS GOOD ADAPTATION?

0330 AFTERNOON TEA
CHARRETTE CLOSE

bendigo: the site

site introduction

Bendigo is a major regional centre in north central Victoria located about 150 kilometres northwest of Melbourne, and is the fourth largest city in Victoria (after Melbourne, Geelong, and Ballarat) with a population of almost 100,000 people. Originally inhabited by the Jaara people, European settlement in Bendigo (then known as Sandhurst) grew through pastoral activity in the1830s and even more rapidly in the 1850s when gold was first discovered. Water was needed to carry out mining activity, and at the time of the gold rush, the typically dry or flooding Bendigo Creek was the only local source of water. Since that time Bendigo remains generally dependent on external sources of water. Today Bendigo is a bustling modern city characterised by nineteenth century architecture, tree-lined streets and picturesque parks and gardens.

While some predictions of climate change on temperature and especially water availability are dire, summer heat, drought and reduced water availability has been experienced many times in the past. Bendigo has been suffering from drought and hence subject to water restrictions since 2002 with Stage 4 water restrictions since 2004. Stage 4 water restrictions include no outdoor watering of public and private parks and gardens and no refilling of pools, unless an exemption is granted (Coliban Water, 2008). While water restrictions are an adaptive measure in their own right, in recent years, they have had noticeable, and on occasions major, impacts.

- In 2050 the population will have grown by approximately 55,000 from the current 105,000, making the population approximately 160,000 people. Growth of 1.6% per annum
- In 2050 the number of houses would have grown from current 42,000 to over 60,000. Needed new houses (e.g. the program) from now until 2050 is 18,000
- Gross regional product $3,944 Million (2010) 1.5% Vic GSP
- Largest employment centre – Health Care and Social Assistance
- Largest value add – Manufacturing
- Largest output – Manufacturing

RESIDENTIAL DEVELOPMENT STRATEGY

In the current Residential Development Strategy [Parsons Brinckerhoff, 2004] the following overarching vision is formulated:

Greater Bendigo will be a:

1. **Progressive City** evidenced by the growth in the economy and subsequent increase in socio-economic status and knowledge and skills base of the community.
2. **Vibrant City** with a rich and diverse cultural and social life in which all members of the community are healthy and feel safe.
3. **Caring City** in which the natural environment has been preserved to create both recreational opportunities and habitat for native flora and fauna, and the heritage assets have been conserved and enhanced.

Greater Bendigo commits itself to:

1. Consolidating the Bendigo CBD as the leading retail and commercial activity centre for the region, supported by a range of suburban and neighbourhood centres providing convenience goods.
2. Conserving and managing places, streetscapes and landscapes of natural and cultural significance (including our Indigenous heritage) which will protect and maintain the municipality's character and sense of place.
3. Facilitating economic growth in the areas of Bendigo's key competencies including tourism and gold mining.
4. Encouraging and supporting the development of the Industrial Sector and promoting Bendigo as Victoria's regional industrial centre of choice for new, emerging and expanding industrial enterprises with distinctive competence in food manufacturing and processing, communications and value adding IT and technology. East Bendigo will be a key location for industrial activity and a further industrial area will be identified for development.
5. Supporting the ongoing development of an efficient transport system that connects urban Bendigo to the wider region and an Inner and Outer Box system that effectively circulates traffic around the urban centre.
6. Developing partnerships with service providers to support the development of an efficient infrastructure network and to encourage the

sustainable use of natural resources within the Greater Bendigo community.

7. Establishing safe, accessible and connected neighbourhoods that provide social infrastructure and that promote physical and social health. These neighbourhoods will be connected through private and public transport networks and linkages for pedestrian and cycle access with equitable access to services.
8. Promoting a high standard of urban design that creates a compact, sustainable and liveable environment that encourages a strong sense of place and facilitates public transport.
9. Facilitating the availability of more affordable housing, which offers a diversity of choice to cater for all housing needs with opportunity to reside in dwellings of a variety of sizes, in various locations where protection of amenity is assured.
10. Encouraging and promoting the continued development of the education sector and in particular to strengthen Bendigo's standing as a key centre for learning in regional Australia.
11. Provide a range of quality passive and active recreation facilities that are accessible and respond to community needs.
12. Protect, enhance and avoid fragmentation of the National and Regional Parks and other areas of ecological significance for future generations.
13. Developing and promoting the cultural aspects of the Greater City for residents and visitors.
14. Protection of productive agricultural land for farming purposes, and to avoid the further fragmentation of this important asset.

STRATEGIC COMPONENTS

The Preferred Strategy incorporates five strategic components for future residential development:

1. Urban Containment; The intent of the urban containment component of the Strategy is to encourage higher density development in potential infill locations up to 6000 people can be accommodated into this component of the strategy.
2. Core Development; Core development will primarily take the form of higher density multi-level dwellings within the Central Business District of Bendigo. Opportunities will be provided within this area for developments to be built up to 4 stories high with scope in some areas to develop up to 5 or 6 stories depending on the locality and subject to neighbourhood character guidelines being met. Up to 1500 people can be accommodated.
3. Community Focussed Development (CFDs); Development that is focussed around community centres allows for the development of a wide variety of housing types and related mixed use developments at higher densities along the main transport nodes. Up to 1500 people can be accommodated.
4. New Development Areas; The development of new areas within the urban growth boundary at Huntly, Jackass Flat, Maiden Gully North East and Strathfieldsaye as shown in Figure 3.4 requires the utilisation of greenfield sites. The intended population capacity per precinct can provide a meaningful focus for the community and allows for the development of a wide variety of dwelling types with varying development densities. There are also opportunities to satisfy some demand for larger allotments (up to 1000sqm) in areas for which the protection of landscape features is important. An estimated total of 20.500 people can be accommodated through new developments.
5. Satellite Development; The satellite component of the Strategy provides the opportunity for incorporating highly sustainable and liveable urban design and housing outcomes in designated development areas located outside the Bendigo urban area (e.g. Marong). Future planning for the satellite developments will place a strong emphasis on sustainable design features. An estimated 8000 people can be accommodated.

According the Residential Strategy, Bendigo's projected growth boundaries aim to accommodate up additional 38,390 people by the year 2030.

'Predicting' future developments, especially regarding urban growth, is always difficult. Looking ahead 30, 60 or even 100 years (figure 2) estimating Business as Usual, e.g. unchanged spatial policy, provides us with a realistic scenario for future urban developments. What we might imagine is that the majority of developments entering the landscape as an on-going outward pressure. Despite the fact that current policies emphasise the need for urban infill and intensified densities within the existing urban boundaries, practical constraints often lead to the 'easier' choice to develop greenfield sites on the urban fringes. This process is represented in figure 2, with regular growing urban areas at all sides of existing Bendigo. The major development directions are induced by the current Residential Strategy, e.g. to the west, northwest, northeast and southwest.

Given the fact that Bendigo is surrounded by forests, which is its primary quality as well, the urban development tends to be designated in bushfire prone areas. The northern developments on their turn are touching on the areas designated as flood prone. It may be concluded that in a Business as Usual scenario, urban development increasingly are located in vulnerable landscapes. This, in combination with the fact that the vulnerability of these landscapes is increasing due to a changing climate over the next 100 years, means that the risk level for the future inhabitants of these areas is raised from both these drivers.

site analysis

Figure 3. City of Greater Bendigo

Figure 4. Topography Plan

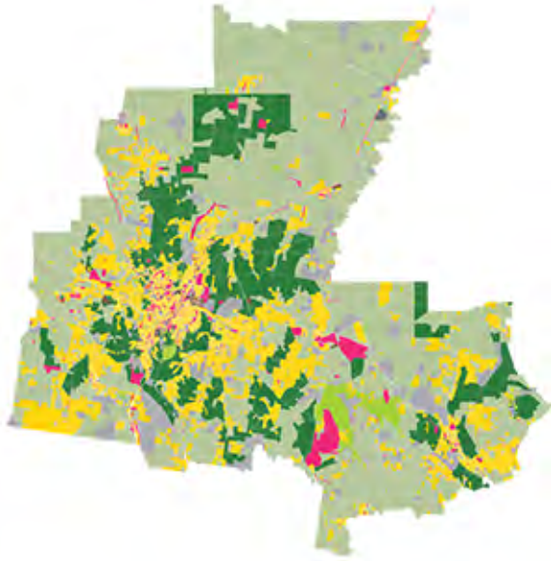


Figure 5. Land Use Plan

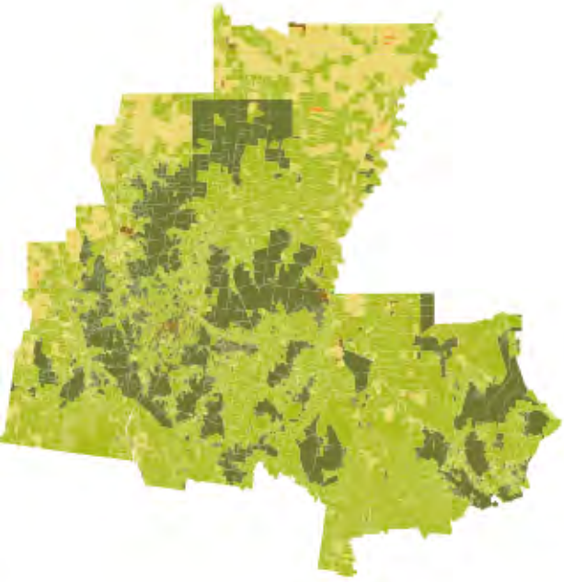


Figure 6. Land Cover Plan

- woody vegetation
- perennial horticulture
- pasture/ grasslands
- cereals
- oilseeds
- legumes
- bare ground
- failed/ unknown crops

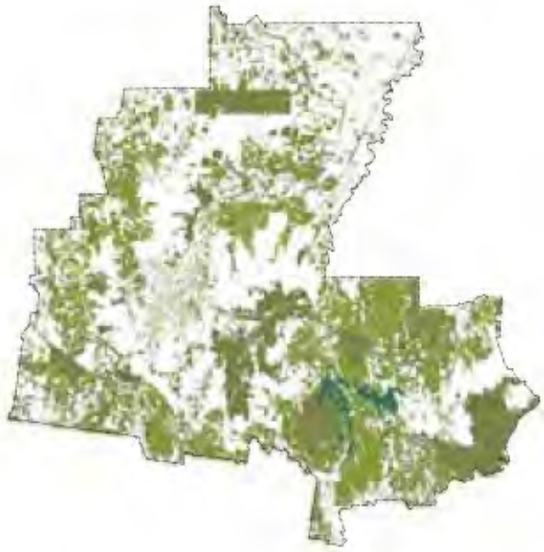
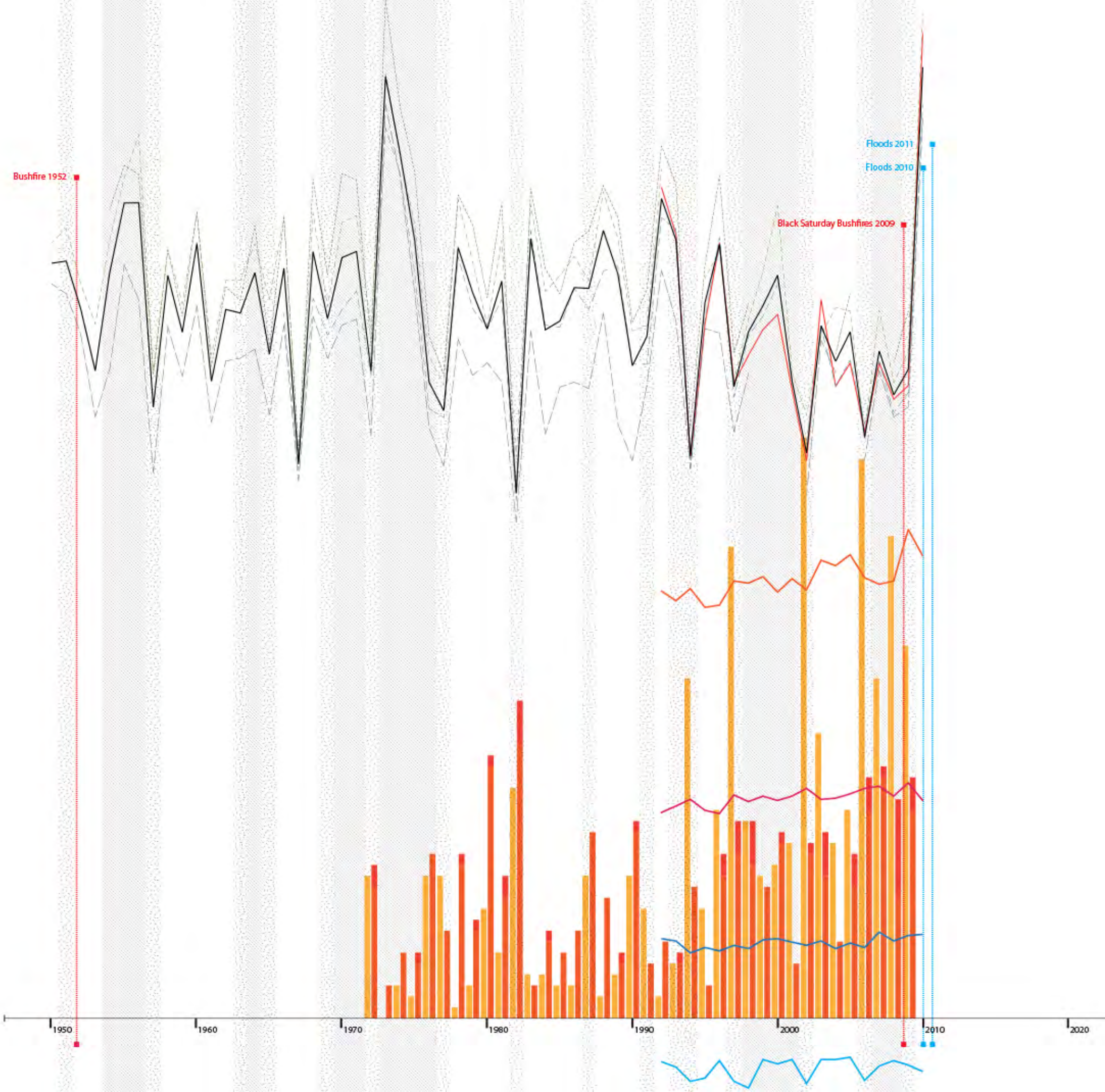


Figure 7. Native Vegetation Plan

- native
- native - woody
- native - structurally mod
- native - grassy
- exotic - woody
- artificial impoundment
- wetlands

Figure 8. Waterways Plan

- water ways
- water bodies


Bushfire 1952
Floods 2011
Floods 2010
Black Saturday Bushfires 2009
1950
1960
1970
1980
1990
2000
2010
2020

climate change

The scenarios in this charrette reflect the knowledge that climate, its associated hazards and the people and places exposed to those hazards can change very quickly.

For climate, we look at two sets of change. The first centres on the year 1997, when maximum temperature in southeastern Australia rose by almost 1°C and rainfall decreased by more than 10%. The second is a reprise, a speculated further change in 2020, where temperature again rises. Rainfall changes are less certain, although climate models and theories suggest that the long-term trend will be one of overall decrease with shorter-term fluctuations.

Understanding historical shifts requires focus on the risks of fire, extreme heat, drought, flash flooding and widespread flooding. These data indicate changes in the region, but unfortunately weather data from the Bendigo region are affected by quality issues before 1993, meaning that the observed changes can be estimated but not accurately quantified. In all cases they are broadly consistent with more accurate records elsewhere in the state.

Despite the lack of available data across Greater Bendigo, there is sufficient data to paint an outline of the weather patterns and extreme weather events already happening in the local areas. Figure 9 demonstrates definite correlation between climatic patterns across North-west Victoria and local weather events (floods, droughts and bushfires).

Figure 9. Graph showing correlation between climate data and weather events.

kindle: design of bushfire resilient landscapes

KINDLE

Design of bushfire resilient landscapes

Kindle /kindle/ [*v. trans*] Light or set fire. Arouse or inspire (an emotion or feeling): *a love of art was kindled in me.* [*intrans*] (of an emotion) be aroused: *She pressed on, enthusiasm kindling within her.* [*intrans*] become impassioned or excited: *the young man kindled at once.*

WHAT Our future climate will be different from the climate we know now. Not only will temperature rise, but we need to deal with many changing topics, such as increased risk at flooding, long periods of droughts, weather extremes and increased risk at bushfires. This studio will focus on the design of stable landscapes capable of handling and dealing with bushfires and other climate hazards. We need to re-think and re-design landscapes as integrated systems in which ecology, water and occupation are deeply connected.

A focus on 'fire proofing' only therefore neglects the complexity and interconnectedness of the landscape. This studio aims to develop conceptual design strategies responding to bushfires, embedded in real-life complexity. Development of design strategies for the 'plannable' drivers of bushfires, such as the availability of water and fuel (material that can burn), enhance regions to better cope with the 'unplannable' ones, such as high temperatures and strong winds.

The studio will be linked and profit from the recently started VCCCAR (Victorian Centre for Climate Change Adaptation Research) - project ''Design-led decision support for regional climate adaptation' and offers the opportunity to research and design in a studio environment and be linked with the real-life practice of the 'Greater Bendigo' case study area at the same time.

The studio aims to explore and design with the dynamics of bushfires in the peri-urban context. The studio will ask questions such as: How can we design with the forces of fire? How can we reconsider Bendigo's regional landscape as a patchwork of the water- and ecosystems, fire-safety-corridors and fire resilient enclaves?

Preparing landscapes for bushfires, not neglecting other climate impacts, such as floods, asks for novel, ground-breaking, complex and critical design propositions, which provide a highly flexible response to fire extremes and a high quality peri-urban space and rural living.

The studio will ask for conceptual design ideas to align peri-urban and rural structures to the increasing extremes of bushfires on the one hand and occasional floods on the other. You will then design sitespecific projects for Bendigo's greater region for adaptation to increasing weather and fire extremes.

WHY Unpredictability and uncertainty are phenomena we have to learn to deal with in a creative visionary way in the ever-growing complexity of 21st century life. These opportunities and constraints also apply to planning and design our peri-urban and rural environments. The bushfires of 2009 across Victoria are strong examples of highly dynamic weather extremes, resulting from climate change. These events have clearly shown the need to re-think the relationship between bushfire prone areas and their urbanised environment and to possibly use bushfires to inspire to increase the qualities of the spatial environment.

HOW Taking the approach of analysing, designing and thinking 'through the scales' the studio will start with a thorough investigation of one of Bendigo's forest complexes to eventually evoke a deeper understanding of the entire regional landscape and the relationships with the City of Bendigo.

The studio group will meet on Fridays, all day. The studio will start with clearly formulated assignments of creative investigations to be worked on from week to week. As students you will develop your own design project. Work constellations in this studio will shift between working individually, in small teams and as the entire studio group. There will be in-class lectures by academics, practitioners and students of the studio, site visits, in class debates, 1:1 critiques and regular short presentations, but also participation in the design charrettes to be organised in the context of the VCCCAR-project. The studio is understood as a continuing 'learning workshop', which requires an interactive engagement.

Regular Class: Fri, 9.30 am to 4.00 pm
Workshops: tba
Location: Building 45 B

Studio participation requires at least two site visits to Bendigo (including travel coast). Part of the studio is also participation in a two/three-day design charrette in Bendigo, for which you need to cater your own expenses regarding travel and accommodation.

the studio

Kindle is a lower pool design research studio (for first and second year students) at RMIT University's School of Landscape Architecture. The studio ran during second semester 2011, and two of six projects, *Re-burn Bendigo and Little Italy*, were presented at the Bendigo Charrrettes.

re-burn bendigo

Shahad Al-Bazo
William Kendall
Jarrad Newman
Josh Newton

The adaptive change framework heavily informs ***Re-burn Bendigo***. The design strategy allows Bendigo to develop resilience through the Re-configuration and Growth stages of the adaptive cycle.

After the shock of a fire, properties lost will be re-configured to provide a safe buffer that is responsive to landscape processes.

On the other side of the city, where it is safer, a designed interface will facilitate safer urban growth. These two interventions together will shift Bendigo as a city east-ward, away from the risk. An emergent interface will develop in response to fire shocks and growth pressures.

RE-CONFIGURING AFTER FIRE
(BUFFER EMERGES OVER TIME)
Fire is a constant threat in the Bendigo region. As hard as it is to accept, the lose of property in the future is highly likely; bushfire risks will increase with the advent of climate change, and our current practices do little to mitigate the risk.

The loss of property is terrible. The loss of life is a tragedy. ***Re-burn Bendigo*** employs a strategy which accepts property loss as being a necessary way of protecting life and future generations.

When a property is lost it is replaced with a resistant form. The most resilient houses will always remain. Over time this allows a safe buffer zone to emerge.

THE DESIGN
The intervention stabilises a part of the landscape and prepares the way for urban growth. ***Re-burn Bendigo*** does not try to control all elements of the urban landscape, instead positioning an intervention that will build resilience regardless of how the community develops.

We have chosen to create an intervention that can embrace change. As Bendigo shifts the surrounding landscape will inevitably vary, but the intervention will become a persistent landscape form.

EMERGENT INTERFACE

ADAPTIVE CHANGE

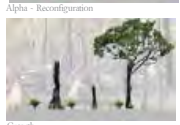
The adaptive change framework heavily informs *Bendigo Re-burn*. The design strategy allows Bendigo to develop resiliance through the Reconfiguration and Growth stages of the adaptive cycle.

After the shock of a fire, properties lost will be reconfigured to provide a safe buffer that is responsive to landscape processes.

On the other side of the city, where it is safer, a designed interface will facilitate safer urban growth.

Alpha - Reconfiguration

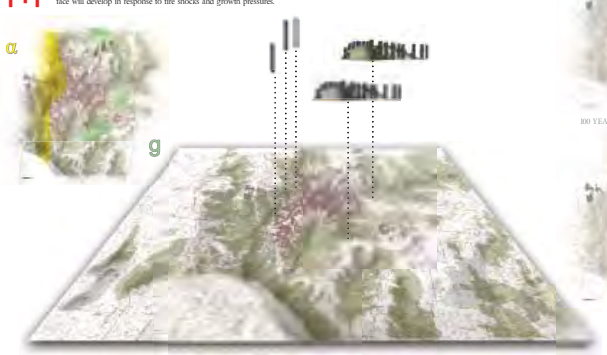
Conservation - Maturity



Growth

Collapse - Release

These two interventions together will shift Bendigo as a city east-ward, away from the risk. An emergent interface will develop in response to fire shocks and growth pressures.



INTERVENTION **NO INTERVENTION**

30 YEARS

60 YEARS

100 YEARS

RESPONSE

RECONFIGURE BURN ZONE

RECONFIGURING AFTER FIRE
(BUFFER EMERGES OVER TIME)

Fire is a constant threat in the Bendigo region. As hard as it is to accept, the lose of property in the future is highly likely; bushfire risks will increase with the advent of climate change, and our current practices do little to mitigate the risk.

The loss of property is terrible. The loss of life is a tragedy. *Re-Burn Bendigo* employs a strategy which accepts property loss as being a necessary way of protecting life and future generations.

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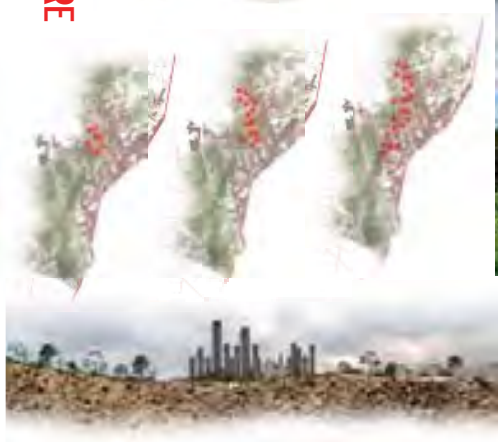


RESPONSE

BENDIGO REBURN SAFE ZONE

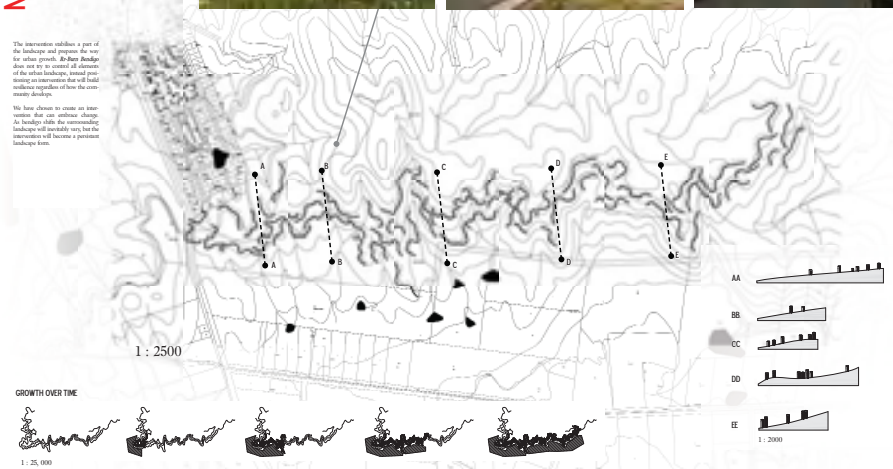
3 YEARS

20 YEARS

60 YEARS

The intervention stabilises a part of the landscape and prepares the way for urban growth. *Re-Burn Bendigo* does not try to control all elements of the urban landscape, instead positioning an intervention that will build resilience regardless of how the community develops.

We have chosen to create an intervention that can embrace change. As bendigo shifts the surrounding landscape will inevitably vary, but the intervention will become a persistent landscape form.



GROWTH OVER TIME

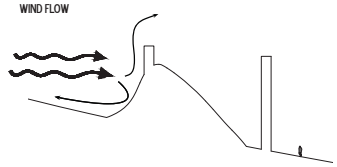
1 : 25, 000

INTERVENTION

DETAIL INTERFACE

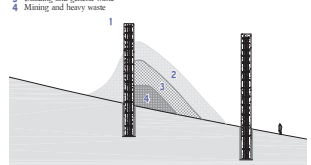
WIND/FIRE PERFORMANCE

WIND FLOW



AA - DETAIL SECTION

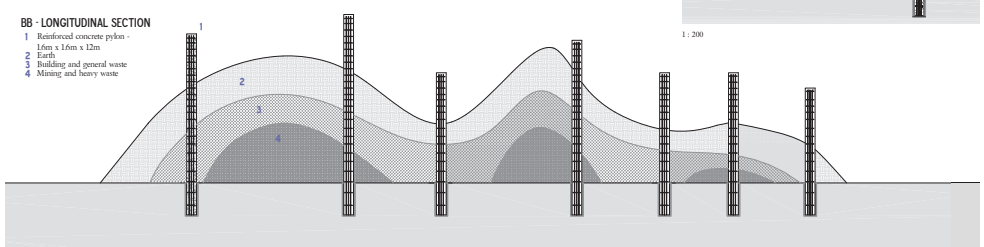
1 Reinforced concrete pylon - 16m x 16m x 12m
2 Earth
3 Building and general waste
4 Mining and heavy waste



1 : 200

BB - LONGITUDINAL SECTION

1 Reinforced concrete pylon - 16m x 16m x 12m
2 Earth
3 Building and general waste
4 Mining and heavy waste



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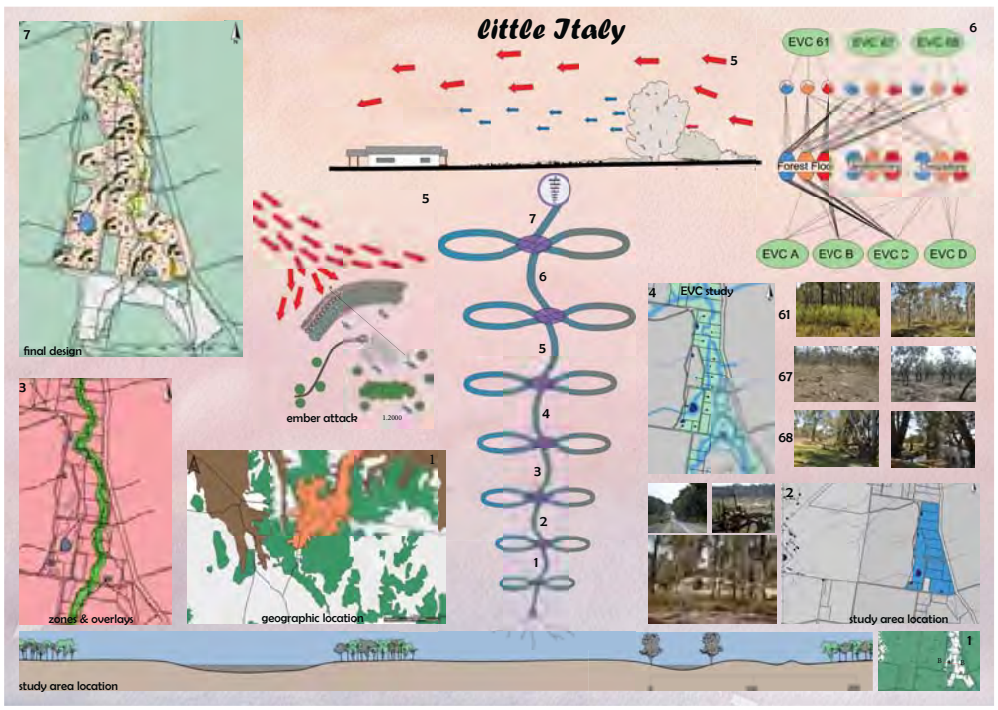
little italy

Ben Crisfield



DESIGN INTENT:

- Feeling of isolation created by hiding dwellings in landscape
- Maximum contact with nature
  - pushing the limits of how close you can safely come to living 'in the bush'
- Ecologically sustainable deign (ESD)
  - Indigenous species supported over introduced whenever possible
- Resilience
  - No reliance on fire-fighters and town water supply
- Working with a burn regime
  - landscape maintained by fires, not a lawn-mower
- Combination of both the landscape approach and the building approach

EVC A Wind Filtration

Location on Site

EVC A Representation

EVC A places plants of moderate and high (Bluoke) fire risk together with the intention of creating a wind break capable of filtering the embers present during an ember attack. The Buloke''s sparser character enables some wind to pass through the plant. This ensures that a bubble of high pressure does not build up behind the wind break and create wind turbulence.

EVC B High fire risk

Location on Site

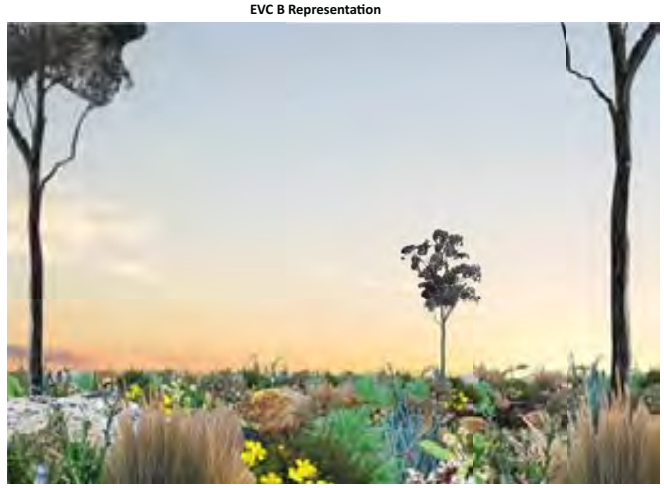
EVC B Representation

In order to minimise dwelling destruction associated with EVC B's high risk plant typology, EVC B has been incorporated into the creek line landscape placing it away from the built form. This placement of EVC B works with the ESO1 overlay, which also works to keep development away from the creek line. On the flip side, the prospect of directing fire towards areas associated with water quality highlights the clash between ESO1 and the WFO overlay.

EVC C

Location on Site

EVC B Representation



EVC C has been developed to further improve EVC 67 Herb Rich Woodland. Fire retardant characteristics. "Rhe understory to EVC 67 consists of few, if any shrubs with the striking feature of this EVC being the high species-richness of the ground-layer and the low biomass of this cover, particularly in summer (DSE, 2009)." EVC C seeks to take this one step further, by removing the majority of the grasses associated with this group and replacing them with ground covers and herbs from EVC 61 & 68.. EVC C tree species have been removed and placed into EVC D

EVC D

Location on Site

EVC D Representation

Trees used in EVC D provide habitat for local fauna. Primarily, EVD D serves to screen dwellings from each other there by increasing the feeling of being isolated in a bush setting. EVC D does not include any shrubs and it is dependant on regular burn cycles to keep the forest floor below the trees free from fuel type materials.

charrette outcomes

legend + symbols

- activated open space
- agriculture
- boutique farms
- aquaculture
- bike paths
- biodiversity corridors - grassland
- biolinks
- buffer - noise/ smell
- buffer - no-built zone
- closed energy network
- commercial zone
- cooling centre
- creek bypass
- creek improvement
- cultural industries
- erosion risk
- flood buffer
- flood risk
- flood swales
- fire buffer
- fuel reduction
- fire risk
- fire walls
- gold mines
- golf course
- green edge
- industrial zone
- irrigation pipe
- methane harvesting
- nature reserves
- protected area
- mine regeneration
- residential zone
- residential zone (holiday homes)
- revegetation
- existing road
- road bypass
- safe place

sale yard

solar farm

solar roof

sports grounds

rail network

light rail network

light rail station

urban development - expanded

urban centre

existing waterways

water pipeline

water collection points

water reservoirs

waste water

recycled water network

aboriginal culture

activated open space

agriculture

army grounds

bike paths

creek - improving water quality

dam

erosion zone

farming - aquaculture

farming - dairy

farming - piggery

farming - poultry

gold

grasslands

manufacturing industries

methane harvesting

mining

nuclear power station

recreational facilities

recycling

re-vegetation

schools

solar roofs

solar roofs

walkability

water sensitive urban design

water storage

water storage for fire fighting

waste recycling

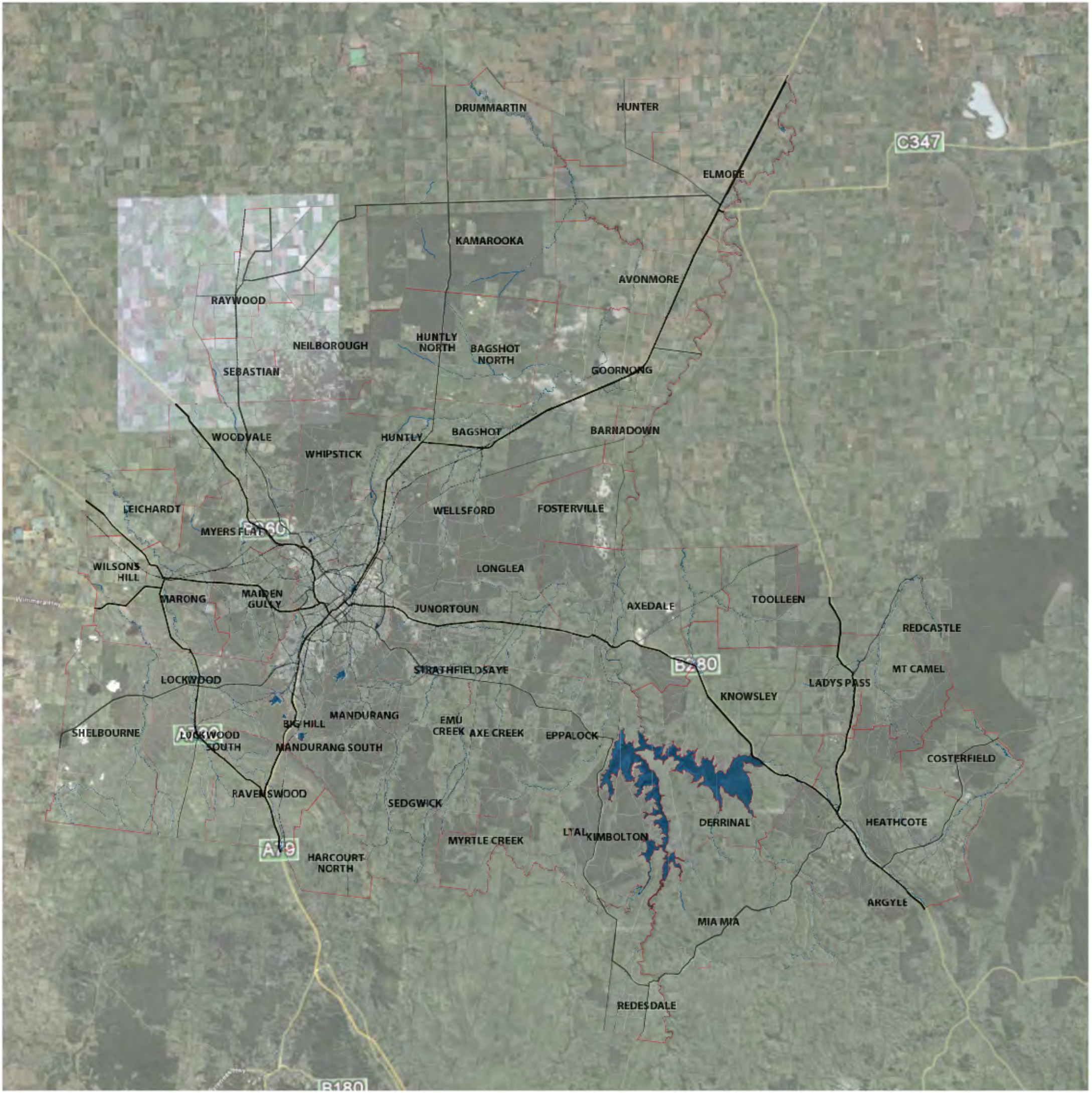
water recyc;ling

wind farm

vineyards

appetiser

The charrette activities started with getting participants to capture what they thought were the key climate change concerns in Bendigo. The impacts of urban growth, droughts, floods and infrastructure needs, as represented in this series of images, reflect the key discussions that would continue to take place during the charrette.


DRUMMARTIN
HUNTER
C347
ELMORE
KAMAROOKA
AVONMORE
RAYWOOD
NEILBOROUGH
HUNTLY NORTH
BAGSHOT NORTH
SEBASTIAN
GOORNONG
WOODVALE
WHIPSTICK
HUNTLY
BAGSHOT
BARNADOWN
LEICHARDT
MYERS FLAT
WELLSFORD
FOSTERVILLE
WILSONS HILL
LONGLEA
MARONG
MAIDEN GULLY
JUNORTOUN
AXEDALE
TOOLLEEN
REDCASTLE
B280
MT CAMEL
STRATHFIELDSAYE
LOCKWOOD
LADYS PASS
KNOWSLEY
MANDURANG
EMU CREEK
AXE CREEK
EPPALOCK
SHELBOURNE
LOCKWOOD SOUTH
BIG HILL
MANDURANG SOUTH
COSTERFIELD
RAVENSWOOD
SEDGWICK
DERRINAL
HEATHCOTE
LTAL
KIMBOLTON
MYRTLE CREEK
A79
HARCOURT NORTH
ARGYLE
MIA MIA
REDESDALE
B180

landscape scale

Scale 1:100,000 at A0

The assignment at landscape scale is to design a landscape-urban regional structure in which climate hazards, such as droughts, fires and floods are taken as the basis for an urban development strategy.
E.g. Where would you place the required 18,000 new houses and in what kind of layout, density or dwelling typology?

city of greater bendigo
> DESIGN ITERATION 01

KEY DESIGN PRINCIPLES:

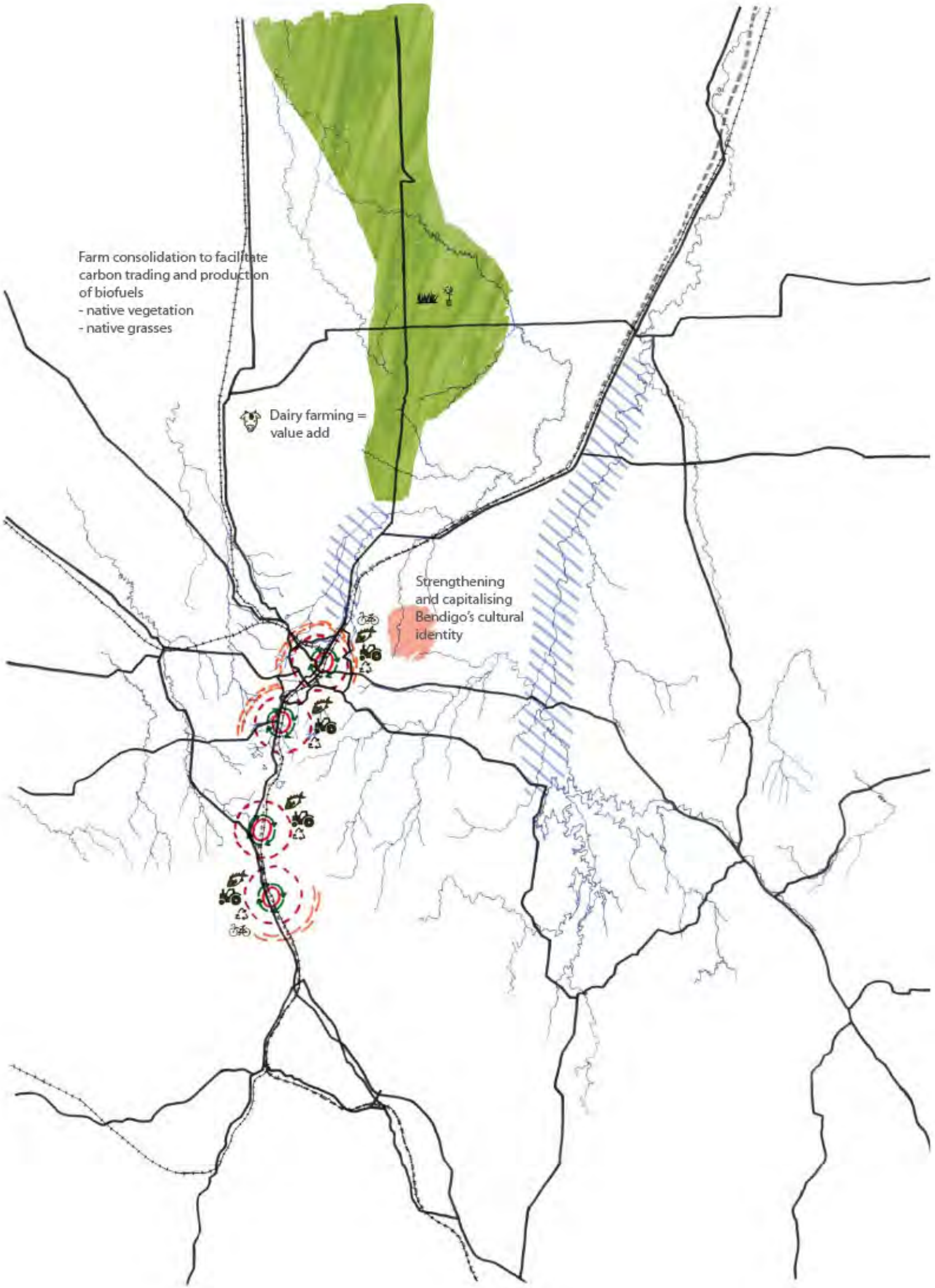
- Capitalising existing rail network by developing new towns along it
- Expanding Huntly, Kangaroo Flat, Ravenswood and Harcourt North into satellite towns/nodes for 5,000 residents
- Self-sufficient communities that are responsible for their own food, energy, water and knowledge capacity
- Bike-friendly community
- Enhancing the sense of community
- Increasing agriculture (especially dairy) for food security, export to Melbourne and local employment
- Bushfire buffers and fuel reduction around new residential development
- Solar farms
- Farm consolidation in the northern areas to facilitate carbon trading and production of biofuels
- Creating bio-links southwards
- Flood mitigation by creating buffer capacity around waterways and capturing storm water
- Strengthening and capitalising Bendigo's cultural identity

SATELLITE TOWNS

Each satellite town is developed as a self-sufficient community for a population of 5,000, integrating a variety of housing densities, food production systems and employment opportunities locally.

HOUSING TYPOLOGY

Residential typologies can incorporate innovation and technology such as solar roofs, productive sky gardens and water harvesting systems. Building heights to vary between 2-storey houses to 5-storey medium density blocks.



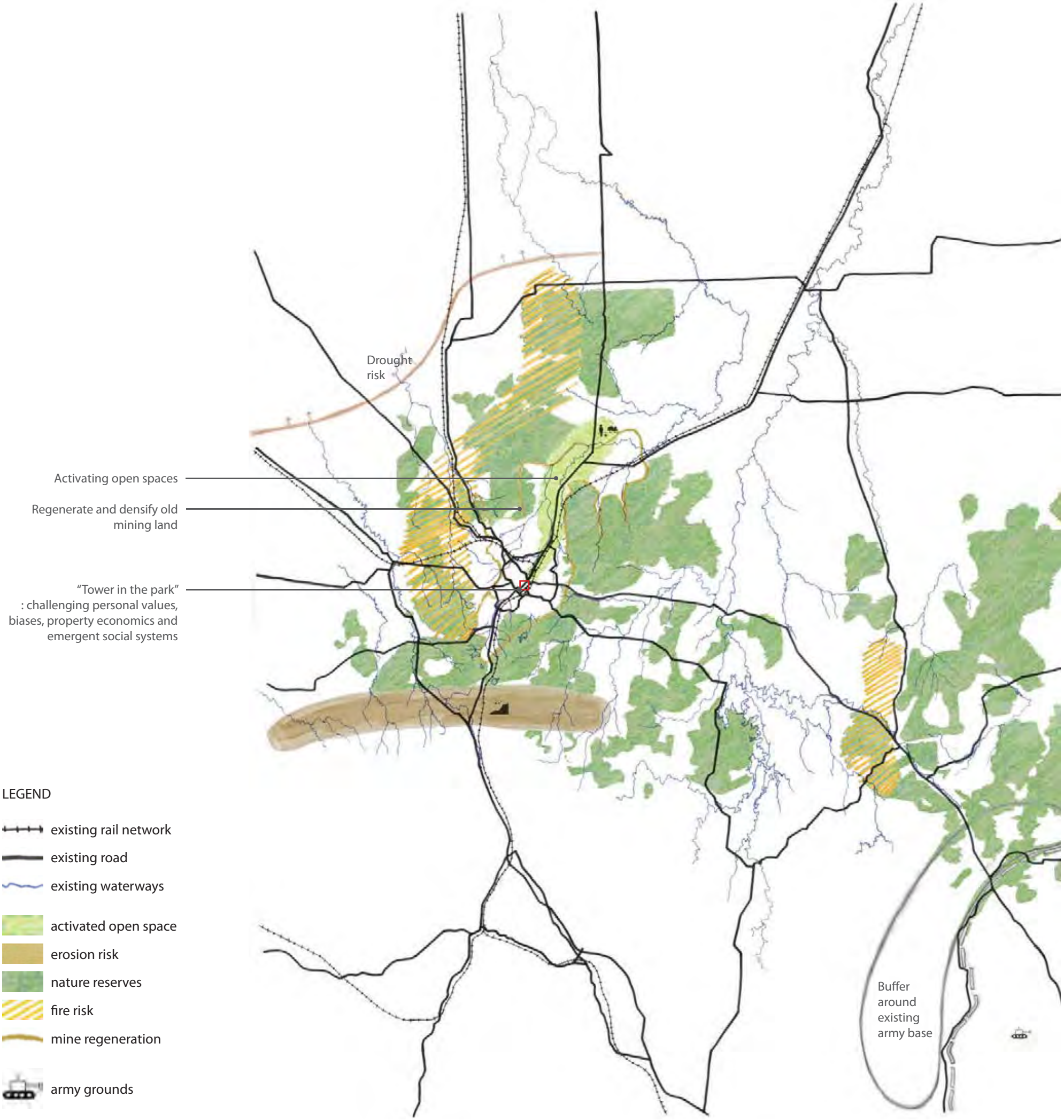
LEGEND

- existing rail network
- existing road
- existing waterways
- biolinks
- cultural centre
- flood buffer
- fire walls
- urban development - expanded
- urban centre
- bike paths
- farming - agriculture
- farming - aquaculture
- farming - dairy
- grasslands
- recycling
- re-vegetation
- water recycling

city of greater bendigo
> DESIGN ITERATION 02

KEY DESIGN PRINCIPLES:

- Risk limitation using the landscape
- “Pack-it-in”: increasing densities
- Shift away from existing residential typology (1/4-acre block) towards innovative sustainable high-density typologies (such as apartment towers, boarding houses, shop houses, share houses, or regenerating old mines)
- Shifting infrastructure away from oil-based systems
- Improving quality of public spaces (such as parks, streetscapes, etc.)


Drought risk
Activating open spaces
Regenerate and densify old mining land
"Tower in the park"
: challenging personal values, biases, property economics and emergent social systems
Buffer around existing army base
LEGEND
existing rail network
existing road
existing waterways
activated open space
erosion risk
nature reserves
fire risk
mine regeneration
army grounds

city of greater bendigo
> DESIGN ITERATION 03

KEY DESIGN PRINCIPLES:

- Fire flooding as first principle: establishing a control-line for bushfires along creeks and waterways
- Re-vegetation (especially of native grasslands) to the north (towards the Murray-Darling basin) for soil rehabilitation
- Grasslands may be tapped for forage, biofuel and eco-tourism (aesthetic qualities)
- Developing an interconnected light rail system using existing rail network; satellite towns to develop around main stations
- Expansion of the northwest region (as opposed to southern areas) into self-sustained communities of 3,000 people with light rail for commute in and out of Bendigo
- Minimise development to the south (e.g. Strathfieldsaye), both to protect valuable vegetation and to maintain valuable real estate
- New development to support an estimated population increase of 16,000
- Water sensitive urban design (WSUD) practices to harvest rain and stormwater for other uses
- Better connection to the waterways to create recreational public spaces, emphasising community identity and connection

Self-sustainable satellite towns around key railway stations

RAYWOOD
3,000 (250)

SEBASTIAN
3,000 (150)

WOODVALE
3,000 (200)

MARONG
8,000 (250)

LOCKWOOD

LOCKWOOD SOUTH

HUNTLY
5,000 (1,000)

GOORNONG
3,000 (300)

ELMORE
3,000 (1,500)

Activated open space to create more connections to river

STRATHFIELDSAYE
3,000 (200)

LEGEND

- existing rail network
- existing road
- existing waterways
- light rail network
- activated open space
- biodiversity corridors - grassland
- fire buffer
- flood buffer
- urban development - expanded
- urban centre
- activated open space
- grasslands
- re-vegetation

city of greater bendigo
> DESIGN ITERATION 04

KEY DESIGN PRINCIPLES:

- Accepting key principle: "Where is forest, there is fire"
- Adaptation by means of the way people respond and be responsible, NOT by changing the spatial configuration
- Co-management of resources/ assets to increase community's sense of shared responsibilty
- Distributed water, energy and other resources
- Modular networks
- Strengthening community and local identity
- Answering the question: "What's in it for me?"

Suggestions of adaptation response:

- Culture change: Where do you want to live? At lower prices? Are apartments realistic?
- City Regeneration Authority for regeneration of old mining land
- Inculcating a culture of fire management (through primary and secondary school education)
- Consolidation
- Practicing self-sustainability of small forms, especially for resources such as energy and water
- Developing site specific nodes of self-sustained communities


Nodes of self-sufficient and self-resilient communities
LEGEND
existing rail network
existing road
existing waterways
nature reserves
urban centre
water pipeline
recycling

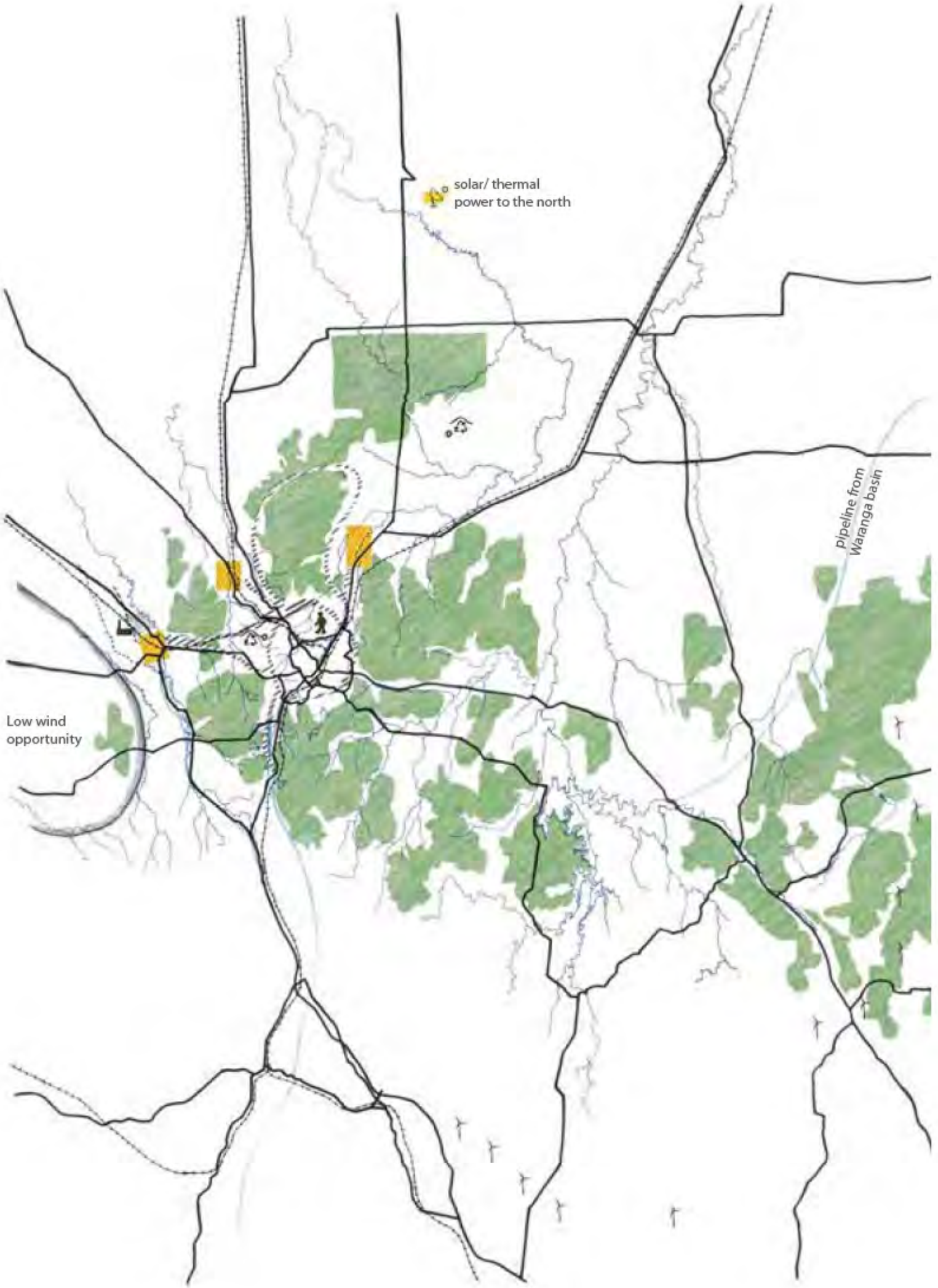
city of greater bendigo
> DESIGN ITERATION 05

KEY DESIGN PRINCIPLES:

- Active community instead of passive: "People to take responsibility for their surrounding landscapes
- Key climate change impacts: floods and heat; bushfires not perceived to be a huge risk

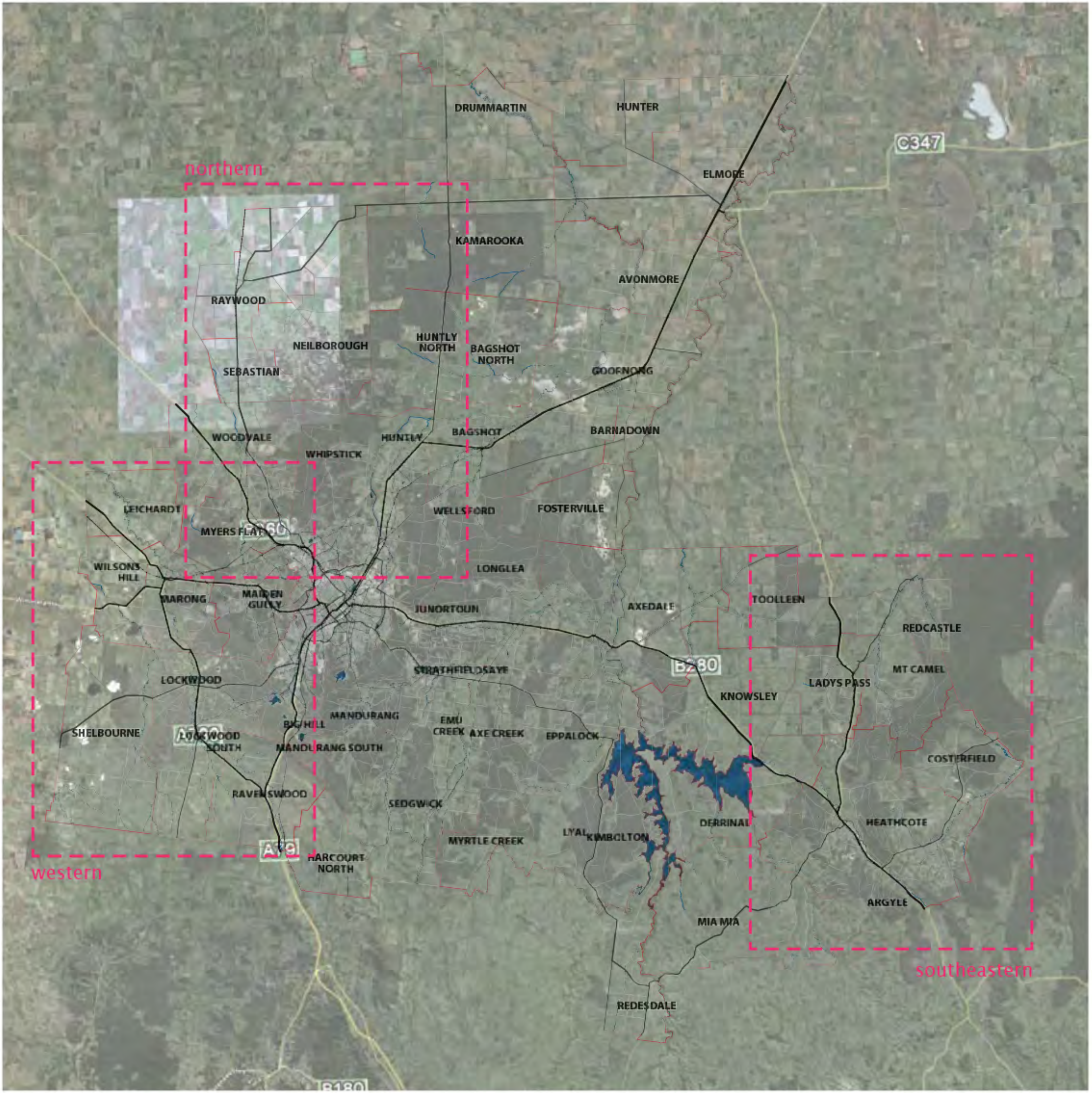
Spatial/ landuse/planning adaptation:
- Increasing ease of access such as the integration of transport networks to include light rail and bike paths
- Swales outside main urban centres
- Managing gold as a valuable resource as well as old mines
- Planning for agriculture self-sufficiency
- Waste management/ recycling
- Energy security: Solar/ thermal/ wind power generation/ distribution
- Diversity of water supplies: potable recycled and rural
- Community points
- Freeway bypass to redirect traffic from congested urban centres

Behavioural adaptation:
- Training and "license" to live in bushfire risk areas
- "Don't go into locations we can't live/exist in"



LEGEND

- existing rail network
- existing road
- existing waterways
- light rail network
- light rail stations
- creek bypass
- industrial zone
- nature reserves
- residential zone
- solar farm
- urban centre
- water pipeline
- manufacturing industries
- walkability
- waste recycling
- wind farm


northern
western
southeastern
DRUMMARTIN
HUNTER
C347
ELMORE
KAMAROOKA
AVONMORE
RAYWOOD
NEILBOROUGH
HUNTLY NORTH
BAGSHOT NORTH
SEBASTIAN
GOORNONG
WOODVALE
HUNTLY
BAGSHOT
BARNADOWN
WHIPSTICK
LEICHARDT
WELLSFORD
FOSTERVILLE
MYERS FLAT
WILSONS HILL
LONGLEA
MARONG
MALDEN GULLY
JUNORTOUN
AXEDALE
TOOLLEEN
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STRATHFIELDSAYE
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HARCOURT NORTH
ARGYLE
MIA MIA
REDESDALE
B180

critical climate landscapes

Scale 1:25.000 at A0

Northern precinct
Southeastern precinct
Western precinct

Three areas have been selected near the city of Bendigo that are critically vulnerable for the impacts of climate change. The assignment is to design a climate resilient future (2050) for the site, taking into account the local climate hazards as well as energy efficiency, the sprawl versus density issue, water resource efficiency, rural living versus existing agriculture and technological performance under climatic constraints and how these factors influence the spatial design. The result of this session needs to be presented (in 5 minutes) at the end of the day, on one design map and may be accompanied by reference images, drawings or other visuals.

climate critical landscapes
> **northern precinct**

northern precinct
> DESIGN ITERATION 01

KEY DESIGN PRINCIPLES:

- Vulnerability, fire, physical buffer area, houses close to forest, ecological
- Buffer-zone, frequently burned
- Whipstick: High fire risk
- Get people involved, understand fire
- CFA training, water recycling etc, connecting these points, bring together these 'silood' elements, funding soft structures
- Open enclosed water-systems,
- Modify landscape and live with it
- "Change behavior, Change expectations"

LEGEND

- existing rail network
- existing road
- existing waterways
- water pipeline
- revegetation
- fire risk
- flood buffer
- recycled water network
- solar farm
- water recyc;ling
- water storage
- solar roofs

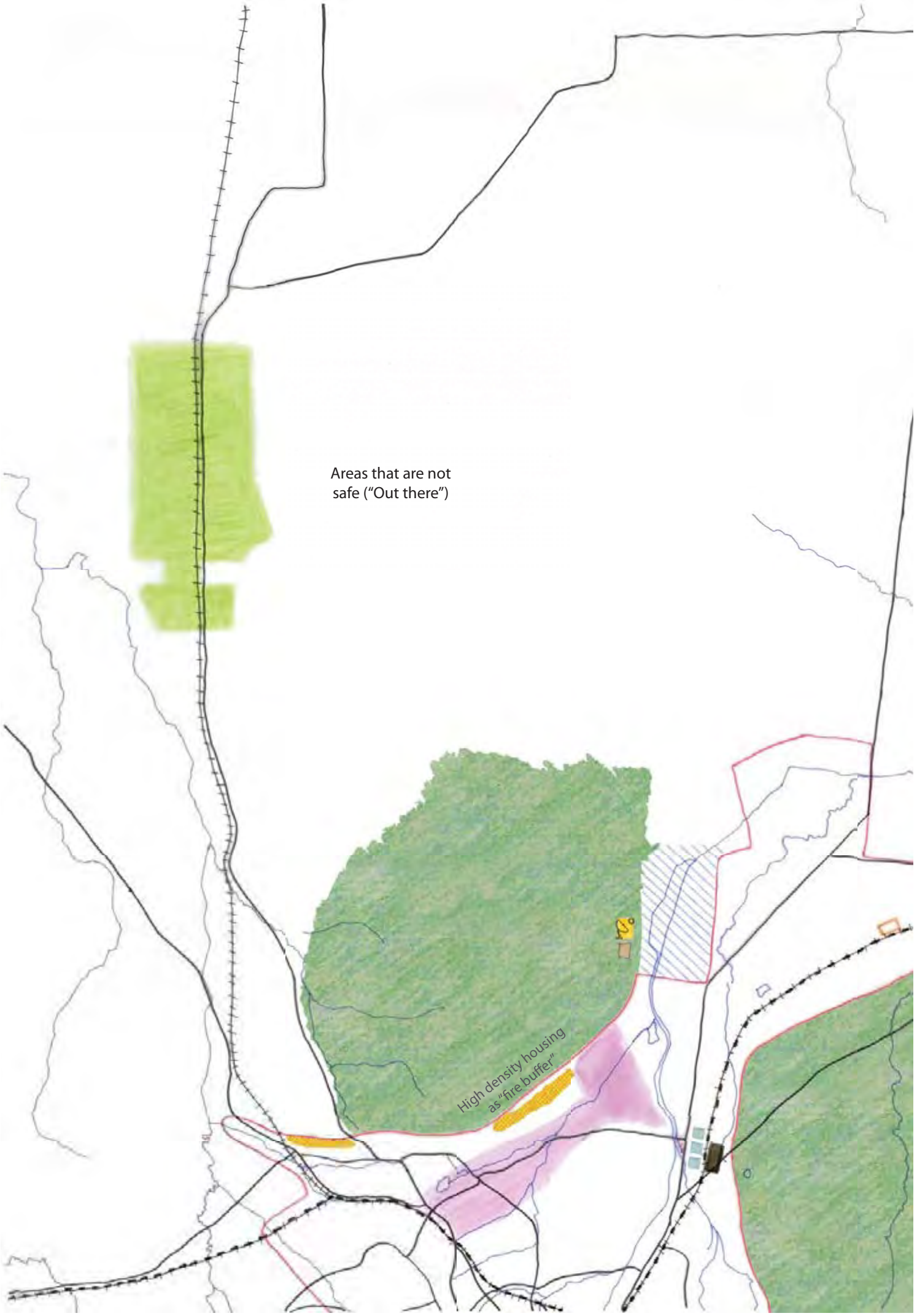
CFA Fire Training

Water recycling system to include both sewer and storm water

northern precinct
> DESIGN ITERATION 02

KEY DESIGN PRINCIPLES:

- Identifying areas which are safe, which are not
- Urban: certain amount of risk, what's the acceptance
- Out there: bunker style
- Flooding zone: avoid development
- Easy defendable, small blocks of barrier first line of defence
- Heat stress mitigation, cooling centres, cooling Islands
- Existing water-system extend in rest of city
- Retrofit ex train-line into light rail
- Embrace mum and dad subdivision: self-sufficiency, water tanks
- Huge divide between city and 'out there'
- Polar city: life saver city, dense at the edges. Higher densities at the outside, lower in centre
- Bring, subsidise to bring poorer people in the city
- The poor are in fire prone or can we turn that around



LEGEND

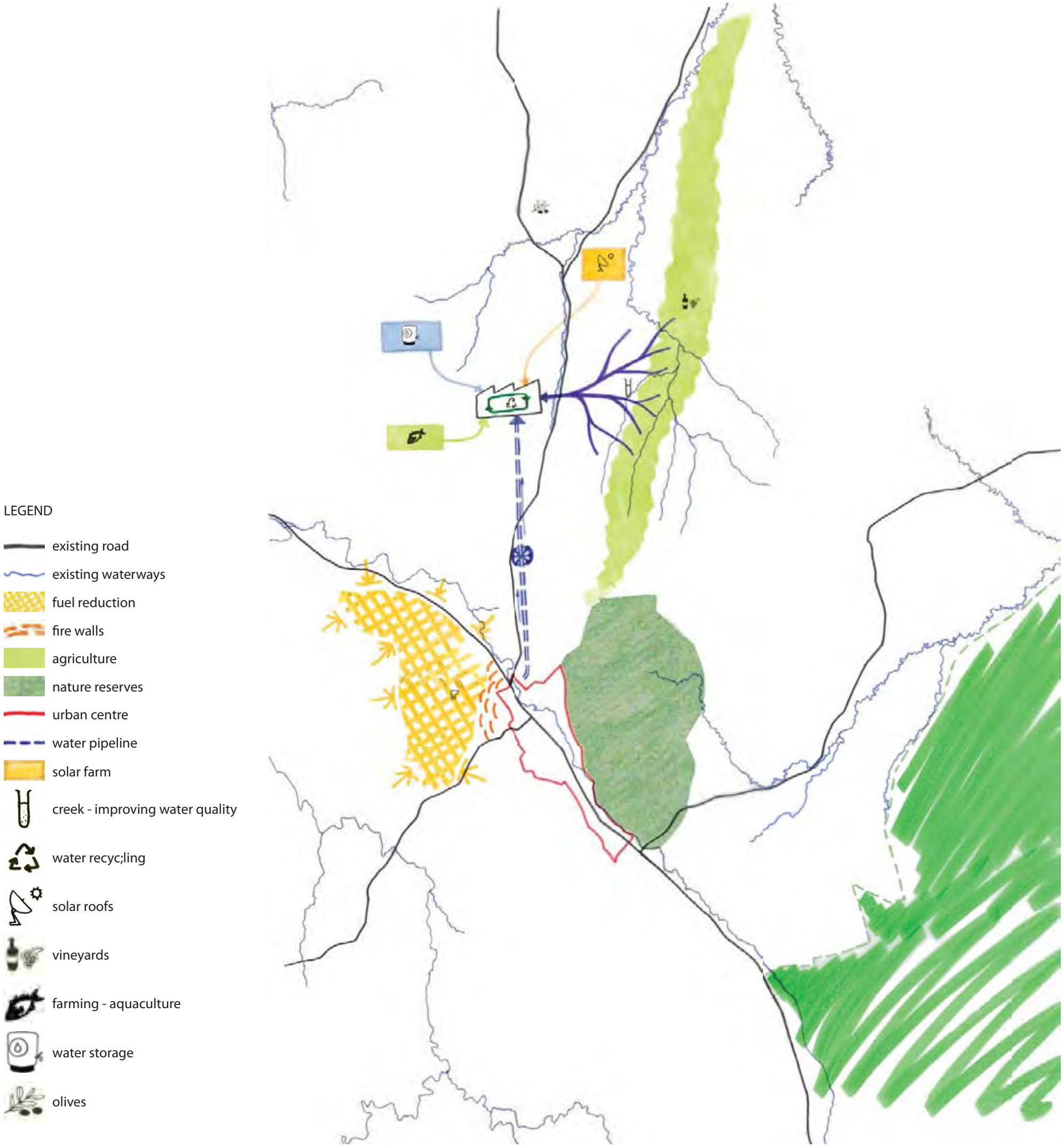
- existing rail network
- existing road
- existing waterways
- light rail network
- light rail station
- agriculture
- cooling centre
- nature reserves
- recycled water network
- residential zone
- solar farm
- urban centre
- water recycling
- solar roofs

climate critical landscapes
> **southeastern precinct**

southeastern precinct
> DESIGN ITERATION 01

KEY DESIGN PRINCIPLES:

- Key town of Heathcote
- Expected population size: 2,000 or 20000 people (current population size remains small because of the lack of transit points)
- Prices escalate then, change
- Eco-agriculture, higher density
- New vineyard type: collecting water
- Store water on glasshouses
- Buffer for fire
- Protecting communities
- Solar farm, housing capture water + store
- Knowledge industries
- Food, freight?
- No longer reliant on current water from Lake Eppalock
- Relation with surroundings
- Small: self reliant, but social consequences


LEGEND
existing road
existing waterways
fuel reduction
fire walls
agriculture
nature reserves
urban centre
water pipeline
solar farm
creek - improving water quality
water recyc;ling
solar roofs
vineyards
farming - aquaculture
water storage
olives

southeastern precinct
> DESIGN ITERATION 02

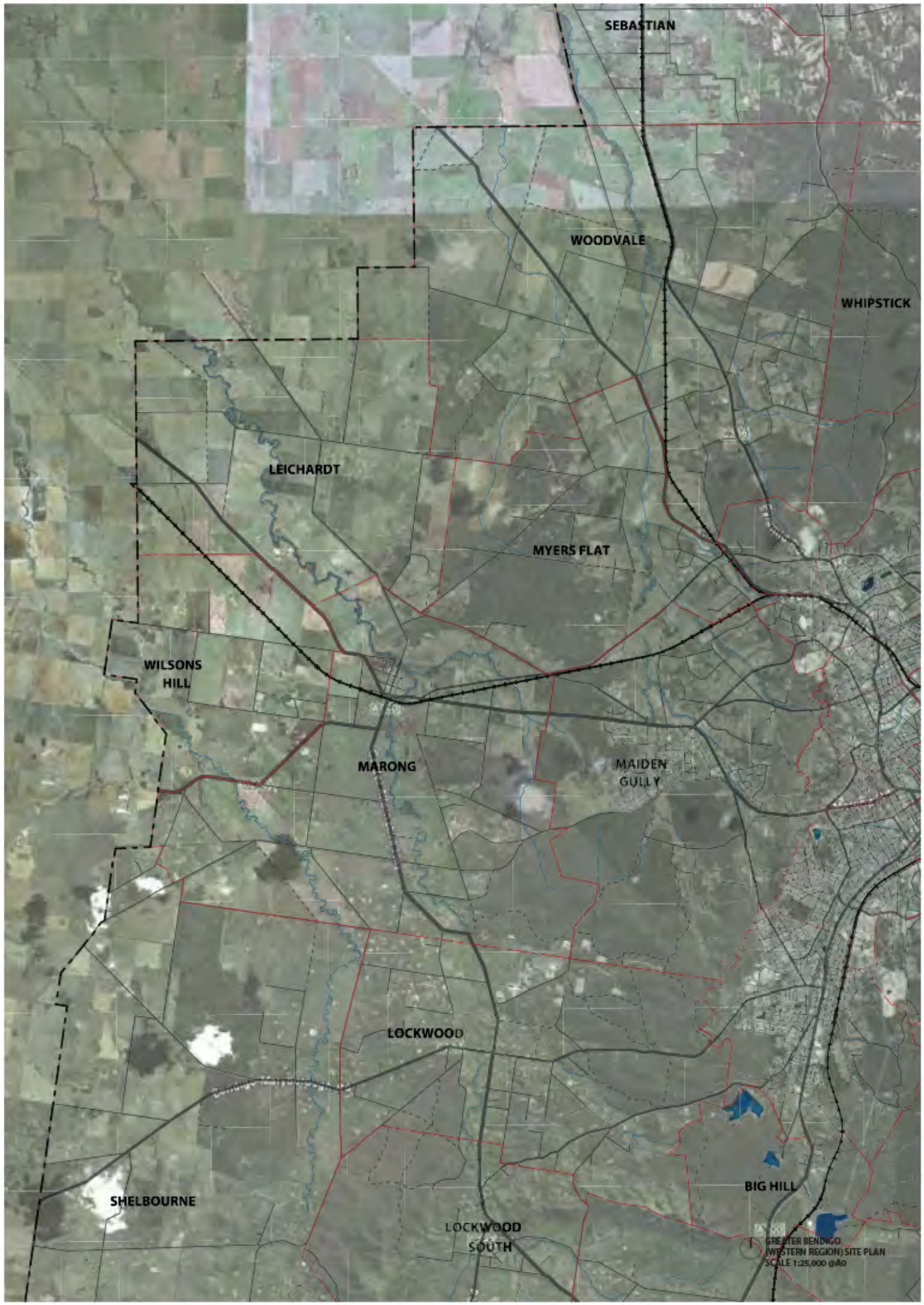
KEY DESIGN PRINCIPLES:

- Isolated community, well-aged
- Long and thin development
- Community: Solar, to from grid
- Embody community
- Community hub,
- Tourism
- Knowledge, central person appointed
- Central services
- Aging population, safe places to go to
- Holiday houses, get absent people more involved in CFA

LEGEND

- existing road
- existing waterways
- solar roof
- nature reserves
- residential zone (holiday homes)
- urban development - expanded
- urban centre
- water recycling
- safe place
- solar roofs
- water storage for fire fighting

climate critical landscapes
> **western precinct**



western
> DESIGN ITERATION 01

KEY DESIGN PRINCIPLES:

- Methane
- Mixed use
- Walkable
- Rainwater
- Solar
- Parkland, cycling
- Wind
- Close to existing town
- Landscape outside

LEGEND

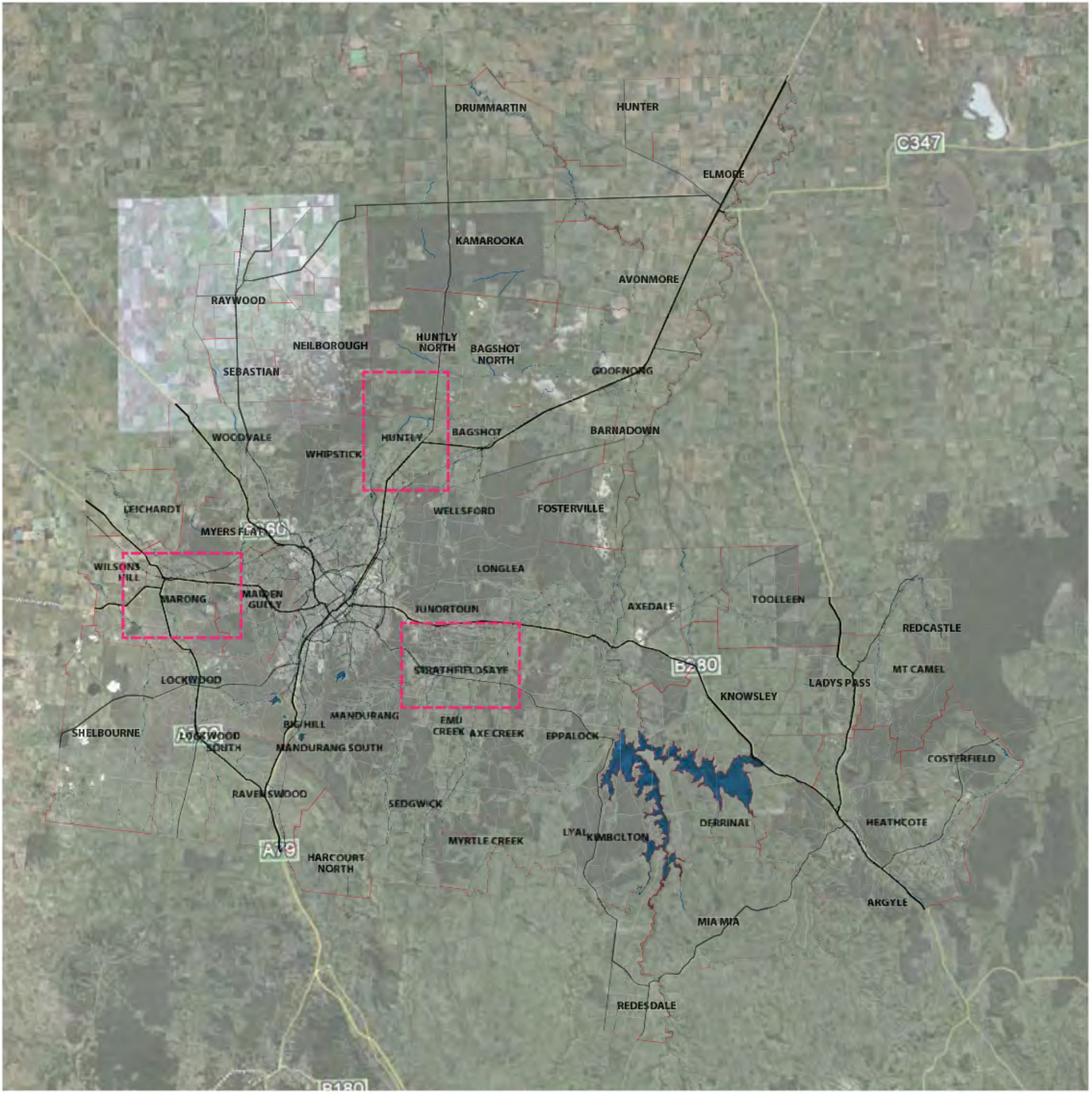
- existing rail network
- existing road
- existing waterways
- activated open space
- agriculture
- methane harvesting
- residential zone
- solar farm
- activated open space
- agriculture
- methane harvesting
- solar roofs
- wind farm

western
> DESIGN ITERATION 02

KEY DESIGN PRINCIPLES:

- Existing infra environment maximise opportunities
- Infill, rail, existing water green
- Link in a loop of rail
- Bypass creeks around new villages
- Myers flat developing
- Changing planning, road, new way of sub-dividing


LEGEND
existing rail network
existing road
existing waterways
light rail network
light rail station
protected area
agriculture
fire buffer
flood buffer
nature reserves
farming - poultry


DRUMMARTIN
HUNTER
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SEBASTIAN
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BAGSHOT
BARNADOWN
WHIPSTICK
LEICHARDT
WELLSFORD
FOSTERVILLE
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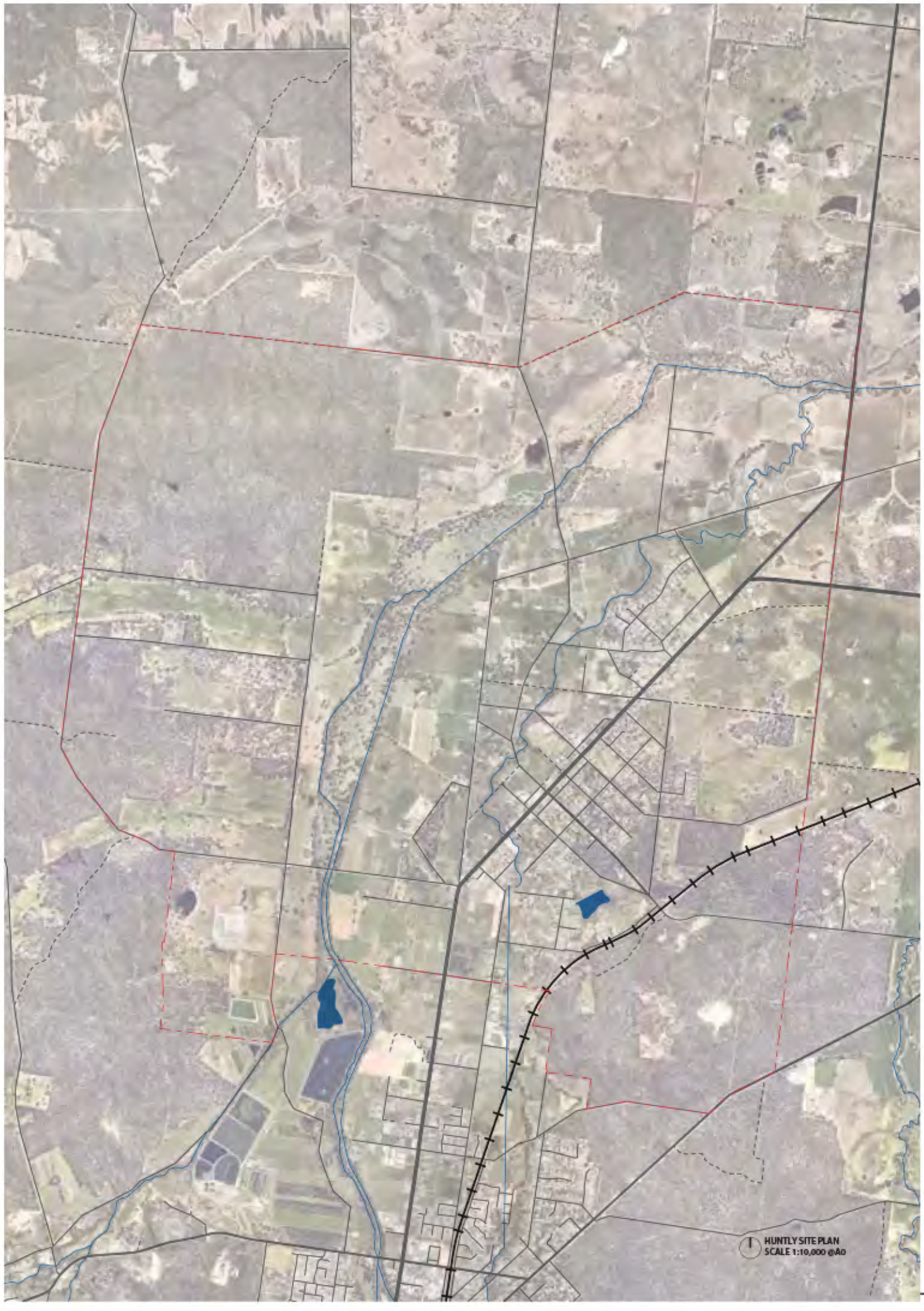
B180

local scale

Huntly
Marong
Strathfieldsaye

local scale
> **huntly**



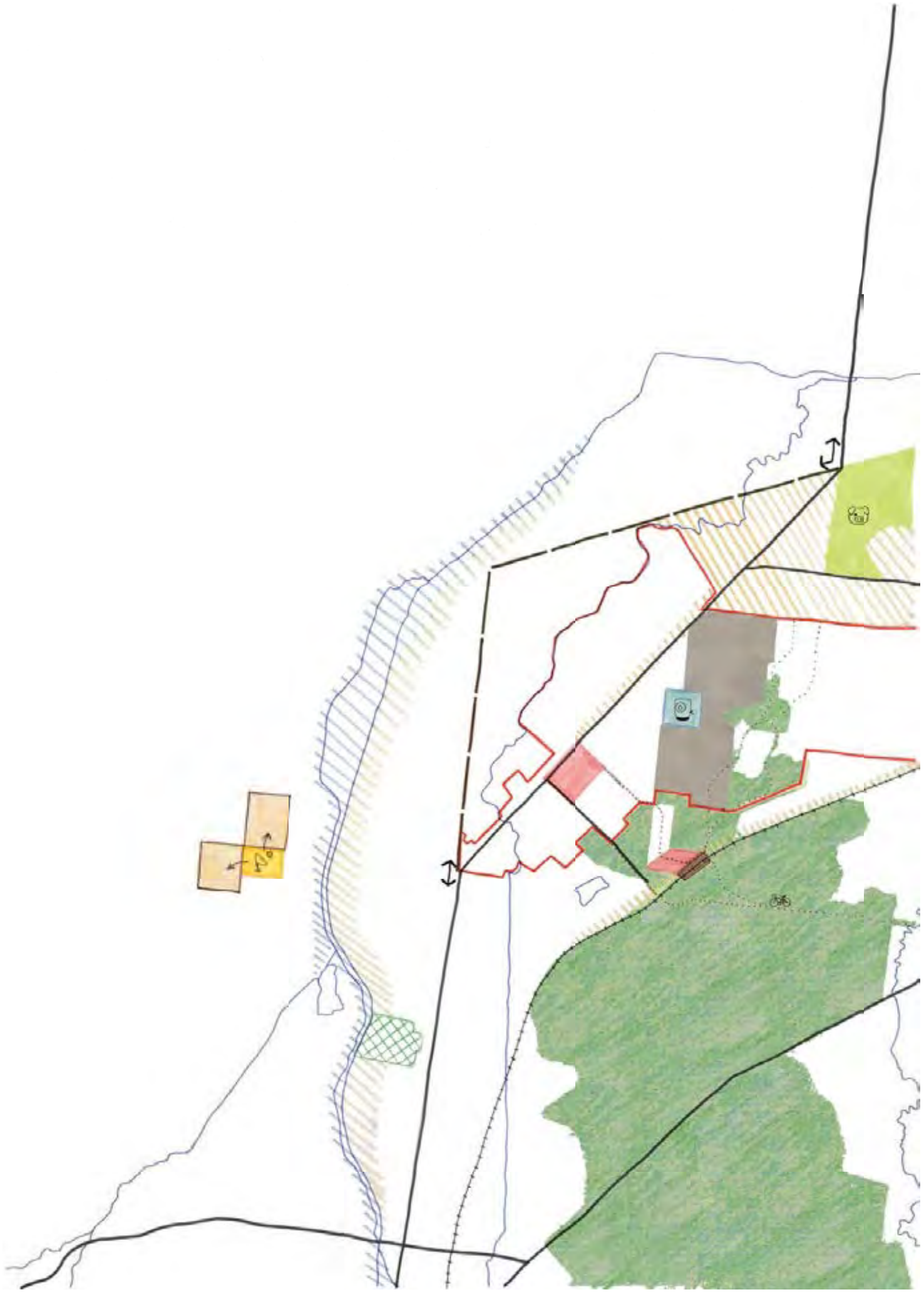
huntly
> DESIGN ITERATION 01

KEY DESIGN PRINCIPLES:

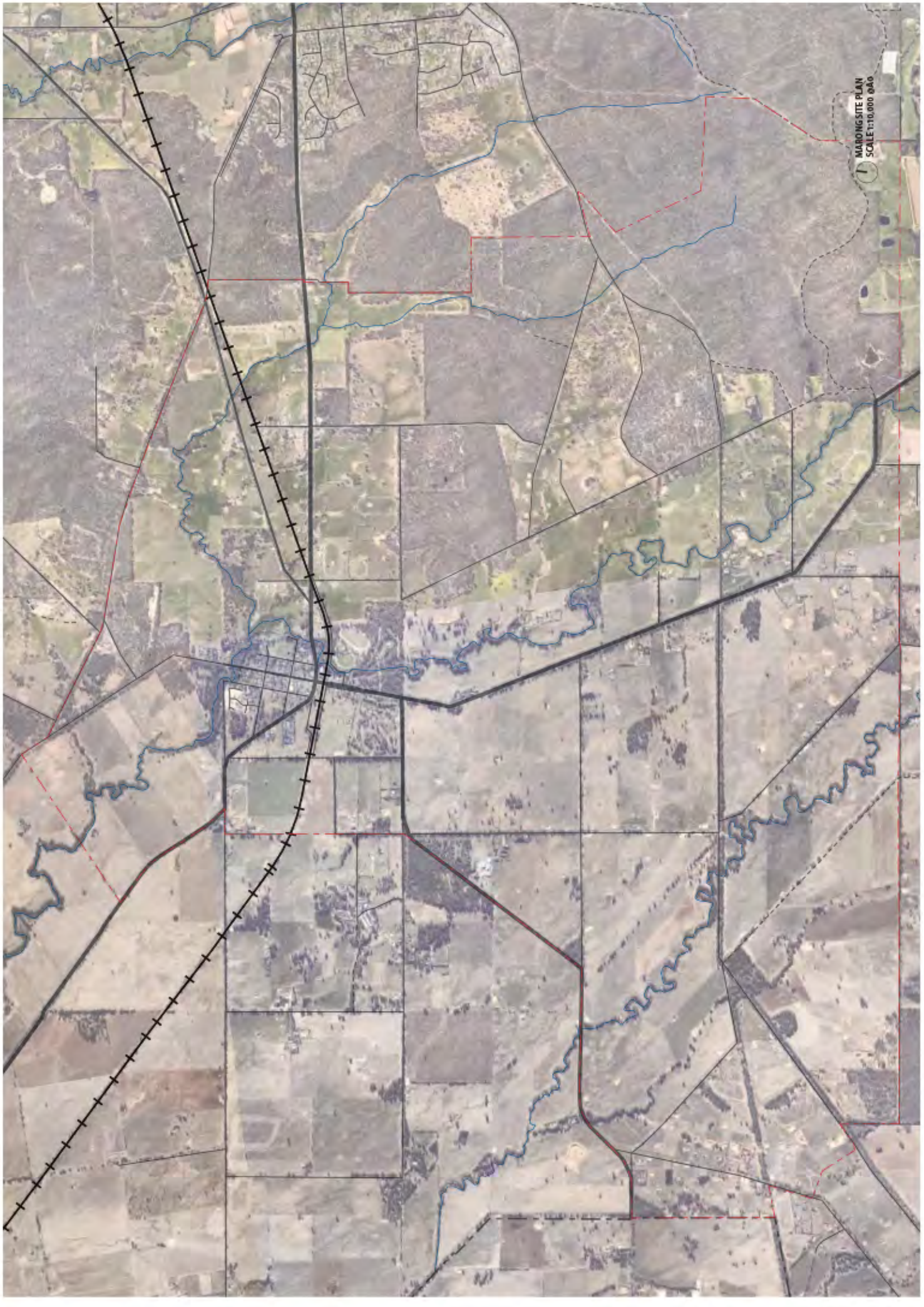
- Flood
- Heat: flat area,
- Water security: treatment plant for urban development
- Unique identity, green suburbs, solar plant
- Buffer to North
- Networked energy and water, modular self sufficiency
- Redesign existing infra, put it outside
- Buffer west, north
- Small scale water storage at south rail
- Golf, identity, movement, people
- Community further out of Bendigo, identity, what is draw card
- Cycling, beauty of the area

LEGEND

- existing road
- road bypass
- rail network
- bike paths
- urban centre
- existing waterways
- sale yard
- solar farm
- sports grounds
- light rail station
- buffer - no-built zone
- closed energy network
- commercial zone
- nature reserves
- cooling centre
- solar roofs
- farming - piggery
- water storage



local scale
> **marong**

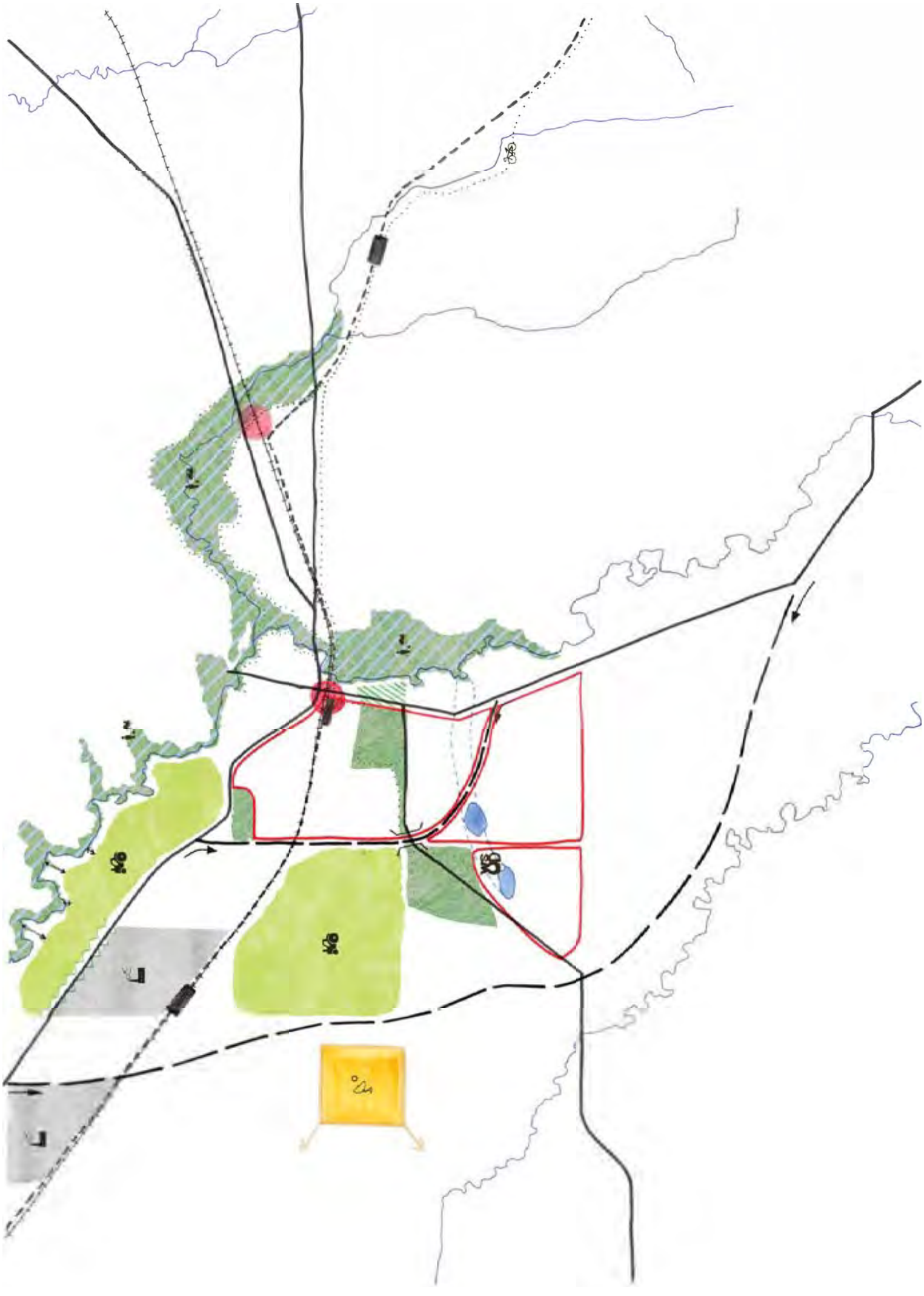


marong
> DESIGN ITERATION 01

KEY DESIGN PRINCIPLES:

- Where is forest, fire everywhere
- Nodes of self-sufficient and selfresilient communities (LANGUAGE)
- Shared energy supply locally
- Not changing the lay out, but the way people respond and be responsible
- Co-management of resources, take a share in it or have management role in it, you will feeling more responsible
- Cultural change? Where do you want to live, lower (too low) Prices? Apartment realistic?
- Get people in there? How?
- Looked at the nodes, set of principles and process of how to proceed

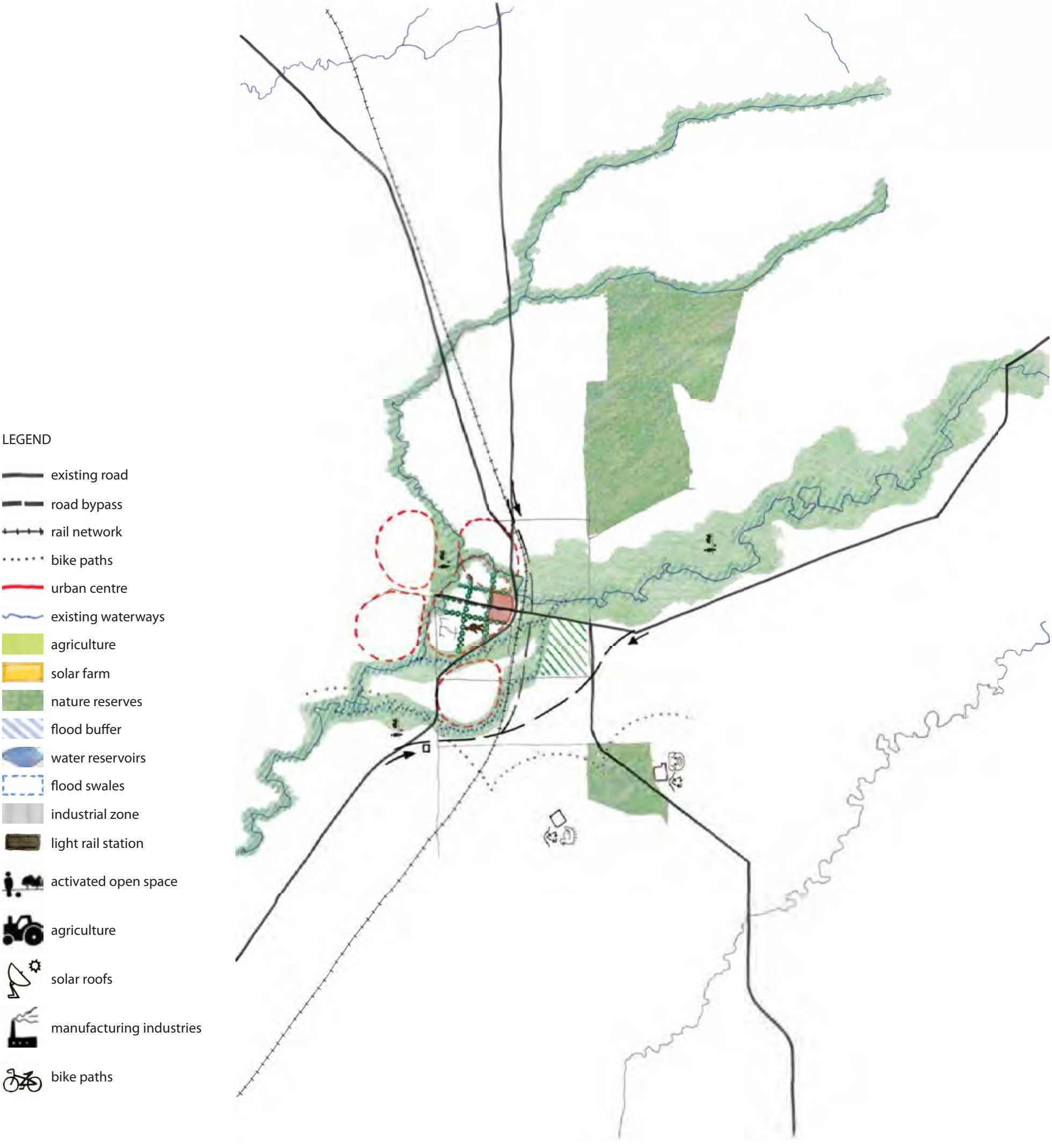
- Differences compared with lower scale.


LEGEND
existing road
road bypass
rail network
bike paths
urban centre
existing waterways
agriculture
solar farm
nature reserves
flood buffer
water reservoirs
flood swales
activated open space
agriculture
solar roofs
manufacturing industries

marong
> DESIGN ITERATION 02

KEY DESIGN PRINCIPLES:

- Access to move around, high density
- Industrial
- Mining area, good gold
- Flood
- Heat
- Swails, before it enters a main Urban area
- Agriculture self-sufficiency
- Energy supply, waste Solar
- People, take responsible for your Landscape
- Active people instead of passive
- Community points
- Integrating transport, light rail, bike Paths into Bendigo
- Freeway bypass
- Fire not a huge risk


LEGEND
existing road
road bypass
rail network
bike paths
urban centre
existing waterways
agriculture
solar farm
nature reserves
flood buffer
water reservoirs
flood swales
industrial zone
light rail station
activated open space
agriculture
solar roofs
manufacturing industries
bike paths

local scale
> **strathfieldsaye**

strathfieldsaye
> DESIGN ITERATION 01

KEY DESIGN PRINCIPLES:

- Bush
- Flood
- Establishment control-lines
- Linear public spaces
- Flood retentions (PEDEPNDENT ON RAINFALL)
- Community refuge places
- Escape route
- New developments southwest area
- Water recycle-plant
- Arable land; boutique farming
- Solar

LEGEND

- existing road
- road bypass
- rail network
- bike paths
- urban centre
- existing waterways
- fire buffer
- flood buffer
- nature reserves
- water reservoirs
- boutique farms
- activated open space
- dam

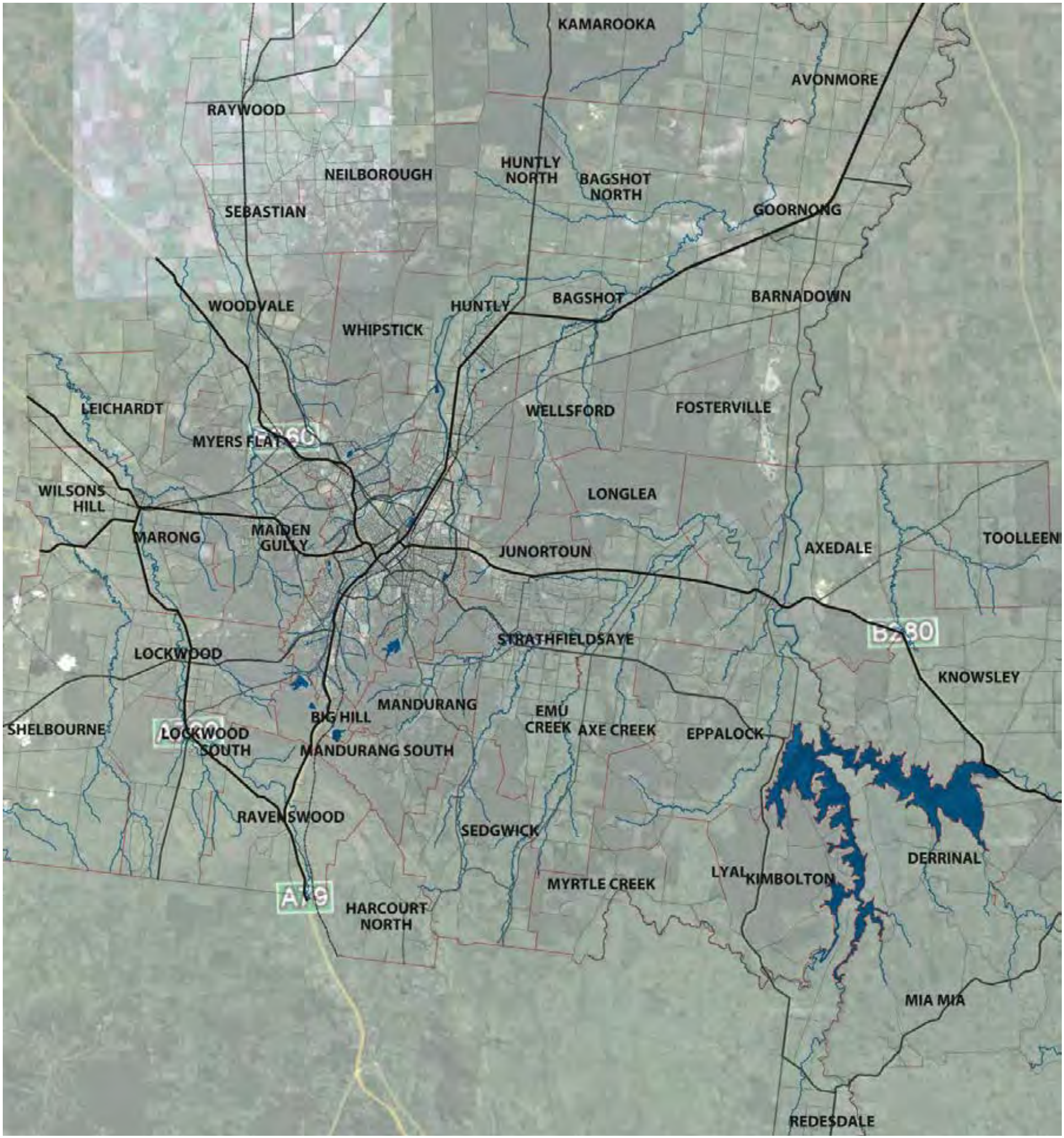
strathfieldsaye
> DESIGN ITERATION 02

KEY DESIGN PRINCIPLES:

- 15 Pack the city in,
- Infra, creeks, green zones throughout town, improve quality creeks
- 3-4 level living towards creeks
- Creeks potential lines for cycling to town
- Densify with low impact. Slice existing house in four parts (USE WHAT EXISTS)
- Using creek multifunctional, transport, community, water health eco Ivy, energy
- Discourage growth,
- Employment (LOCAL HUB), area, fire resilience
- Creek as resilient buffer for fire
- Personal responsibility, if you life there, you have a larger responsibility,

LEGEND

- existing road
- road bypass
- rail network
- bike paths
- urban centre
- existing waterways
- agriculture
- nature reserves
- protected area
- improving creek quality
- residential zone
- school
- farming - poultry
- bike paths


KAMAROOKA
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RAVENSWOOD
SEDGWICK
DERRINAL
LYAL
KIMBOLTON
MYRTLE CREEK
HARCOURT NORTH
MIA MIA
REDESDALE

planning with clay

FOUR SCENARIOS

1. Learning to live with fire
- Using regional environmental assets, the Country Fire Authority, government and community environment groups and control burning in which the community take part to develop floristically rich but fuel-poor buffer zones between bush and houses.
- Having a licence to live in high risk areas gained via training; training and community involvement maybe also deliver insurance discounts.
- Quarantining forest conservation zones where fire risk is high and concentrating development in adjacent open areas.

2. The golden centre
- Gold is an asset that may be extractable in the future, so those benefits can be emphasised as part of the region's history but also its future.
- Gold mines under the region are a source of cool air and water that could potentially provide a heat-exchange resource. The old workings now are seen as a hazard, not a resource.

3. Self-contained satellite centres with mass- and human-powered transport through bush zones to Bendigo
- Village squares with open space as a safe place for kids to play
- Open co-located bike-ways and flood areas
- Mass transport (most favoured light rail)
- Co-located power generation and industry

4. Community linkages
- Community gardens and open areas as a resource for higher density developments
- Promoting the community management of fire, water, environment to maintain local links between community and the environment

5. Contaminated urban zones from old gold workings
- Some areas close to the city centre could be "terraformed" to stabilise toxic residues and re-designed to manage local micro-climates with flood management, stormwater harvesting and cool zones being a feature. This would be the inland version of a Docklands development and provide medium density housing for older residents close to amenities.

the shining heart of the state

KEY DESIGN PRINCIPLES:

- Solar energy: primary source of energy
- Energy security, community responsibility
- Cultural bugs, precincts, Solar panels
- Blue water storage
- Public transport line connected to it
- Self-identifying
- Food bowl, northern heart, solar, rail-line, water storage
- Energy production rest-products agriculture
- Transport, rail-services, in and out of Bendigo
- Housing Double storey, expanding other types,
- wind-towers to cool, within housing types (passive design), residential,
- Eppaloch, half its size
- Waste
- Transport, water-pipe infrastructure
- Piping in and collecting water and pipe 'put'
- Integrated connected water networks, also for energy
- Household connectedness, is part of the network
- And localised production in smaller subareas

LEGEND

existing rail network

existing road

existing waterways

light rail network

agriculture

aquaculture

gold mines

nature reserves

industrial zone

residential zone

solar farm

urban centre

airport

agriculture

bike paths

gold

manufacturing industries

farming - aquaculture

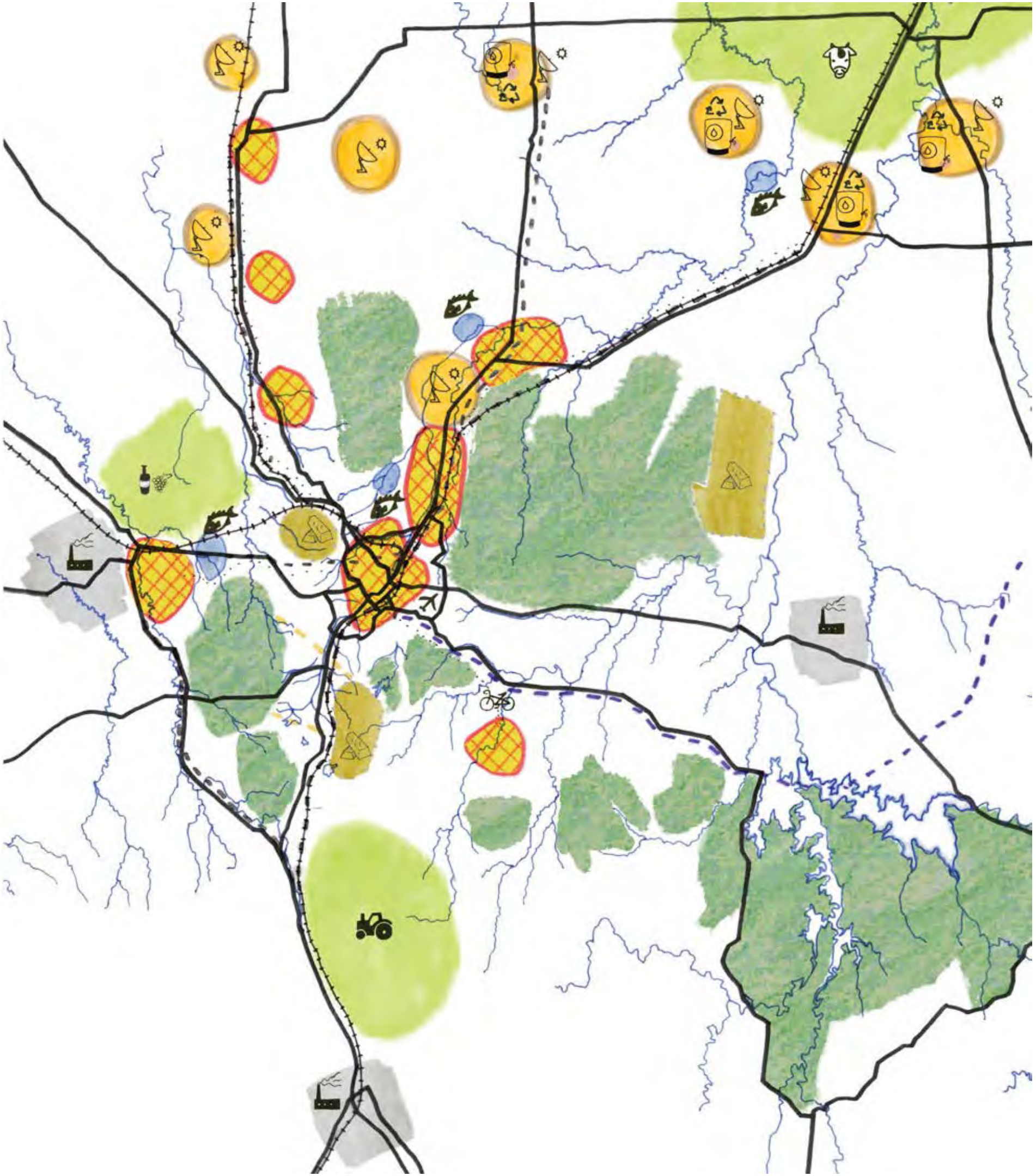
farming - dairy

solar roofs

water recycling

water storage

vineyards



the lifesaver region

LEGEND

existing rail network
existing road
existing waterways
light rail network

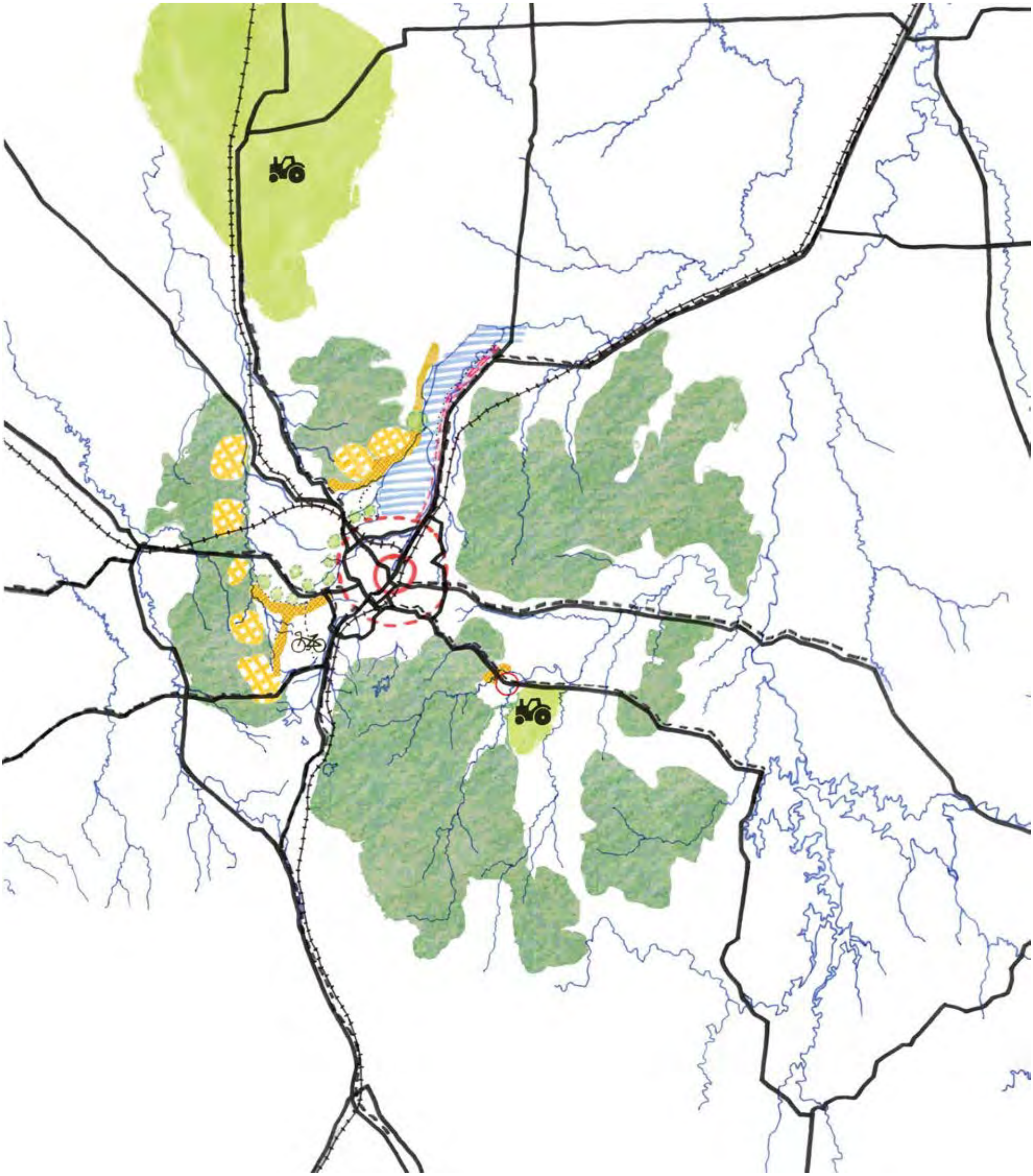
activated open space
agriculture
flood buffer
fuel reduction
nature reserves
residential zone
urban centre

agriculture

bike paths

KEY DESIGN PRINCIPLES:

- 17 Fortress, density high, protected
- Fortressed wall,
- High density housing, outer edges and in centre
- Corridors of public and green infra
- Controlled Burns and planting for management
- Evacuation strategy
- Road public transport, trains
- Orange high density lifesaver
- Self-sufficient energy
- Fuel mosaic controlled burning
- Cross section of fire
- Tree- road bike-path green open grass, high density house wet roof, fire truck
- Big fire devil,
- Blue flooding area



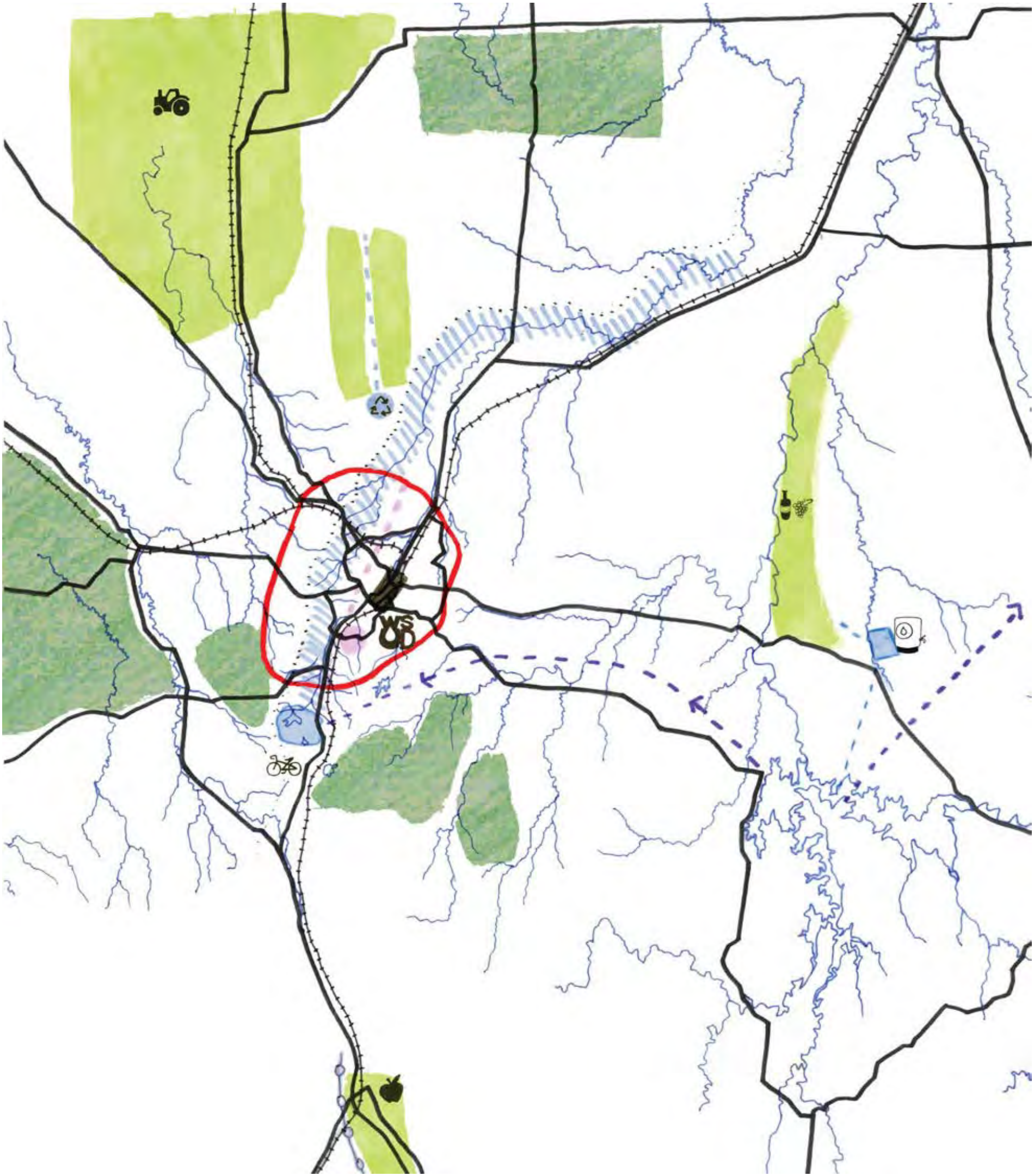
the scarcer the water...

KEY DESIGN PRINCIPLES:

focus on community engagement, and responsibility of citizens), best practice ion capturing as much water as possible – and being as efficient as possible.
Challenge of growing more food with less water in an urban setting.
18 Community engagement (clocktower water meter)
Natural waterways protected and enhanced
Capture storm-water (as a resource prior to entering creek, buying it backwill be expensive)
Opportunity in 'fat' times saving in rich times of much water
Flood mitigation or water opportunity (not let floods go to waste)
WSDU
Manage water-seepage evaporation agricultural channels
Zero discharge to streams from treatment plant
Balance reduction of Food Miles with water sensitivity (balcony gardens, rooftops, urban agriculture)
Market gardens by THE city, biodiversity, commercial benefits, recycle and Reuse water
Bundle of linear infra, bike-paths
Self-contained house (for water)
Solar hot water veggie garden,

LEGEND

existing rail network
existing road
existing waterways
light rail network
agriculture
cooling centre
flood buffer
irrigation pipe
light rail station
nature reserves
recycled water network
residential zone
water reservoirs
urban centre
apple farm
agriculture
bike paths
vineyards
water recycling
water sensitive urban design
water storage



if you can't stand the heat...

KEY DESIGN PRINCIPLES:

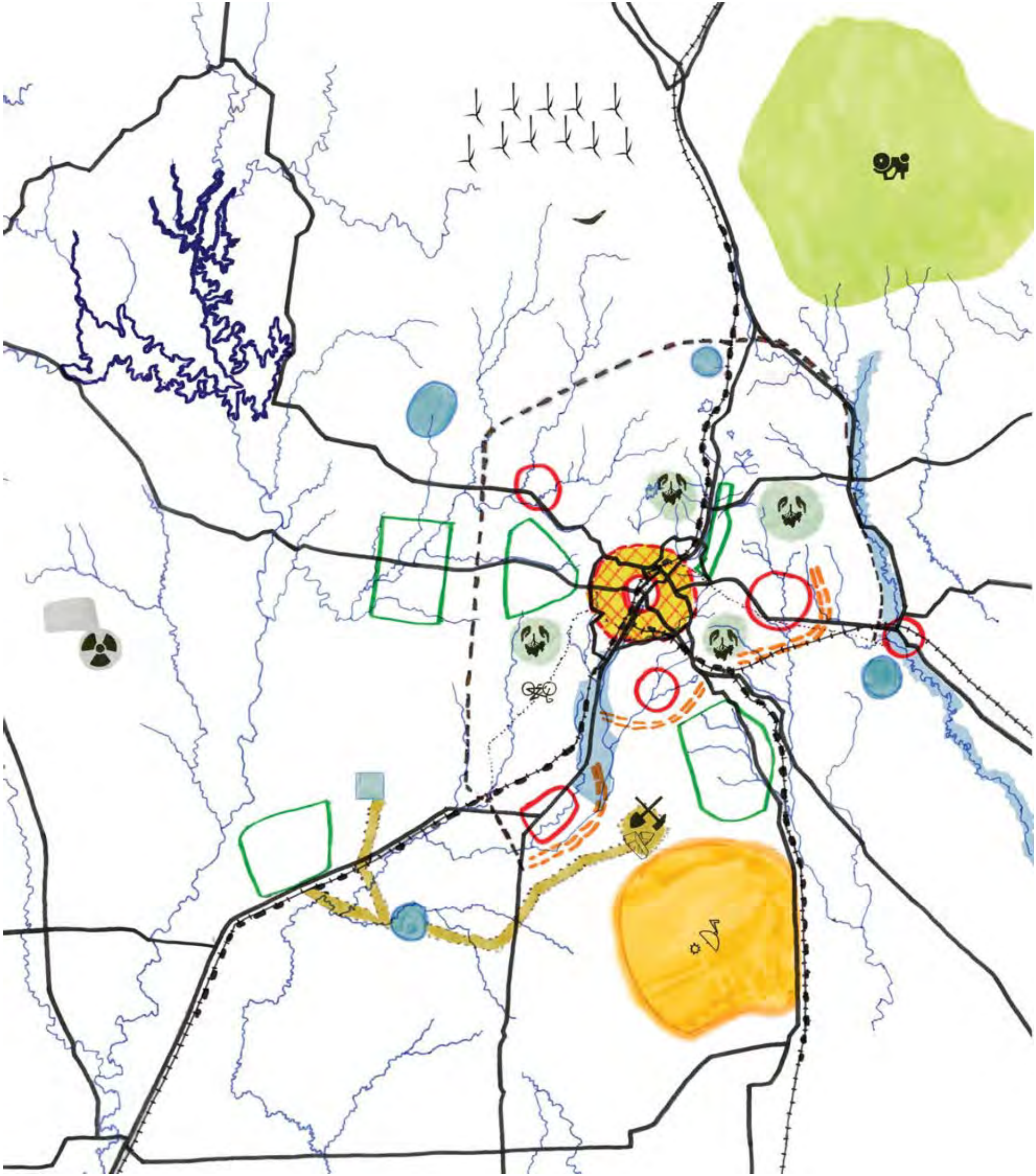
- Deal with heat, just gotta face this, heat fire
- Fire protection
- Centre connector (light train)
- Fruit bowl,
- Recycling can be much better
- Residential tower in centre of town,
- Refuge for hot days
- Parabolic dish, Solar farm
- Bikeways
- Mixture of density and ...
- Water power, hydro at eppalock
- Nuclear plant, mutant snail
- Mining cooling head, cool tunnels to use as cooling wind
- Natural assets
- Aboriginal heritage

LEGEND

existing rail network
existing road
existing waterways
light rail network

agriculture
cooling centre
fire walls
flood risk
gold mines
nature reserves
industrial zone
residential zone
safe place
solar farm
urban centre

aboriginal heritage
agriculture
bike paths
gold
mining
natural asset
nuclear power station
solar roofs
wind farm



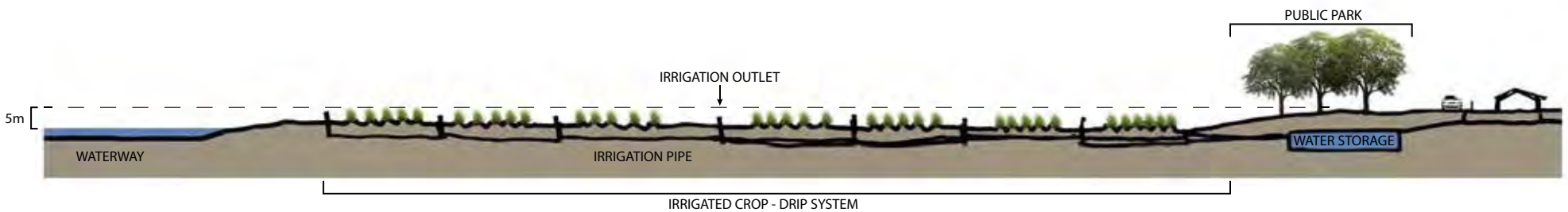
post-charrette

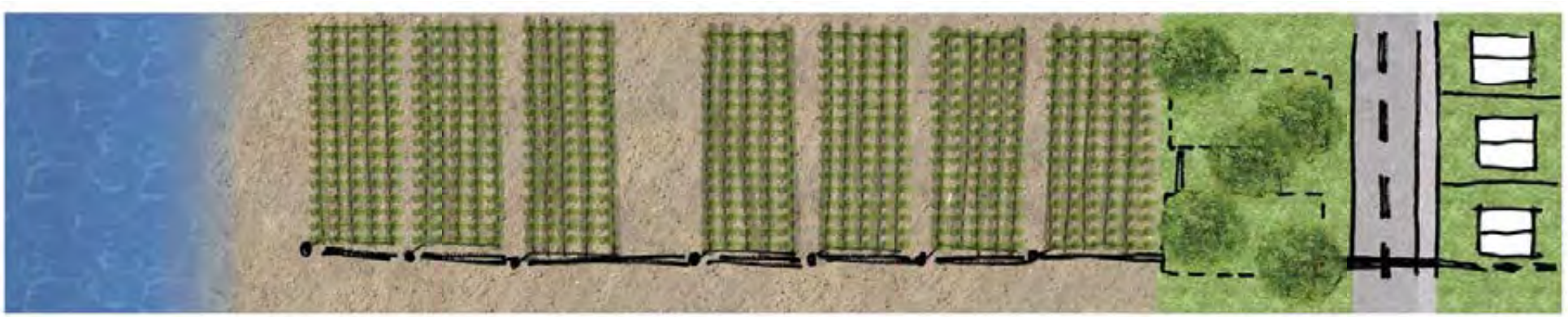
details + design development

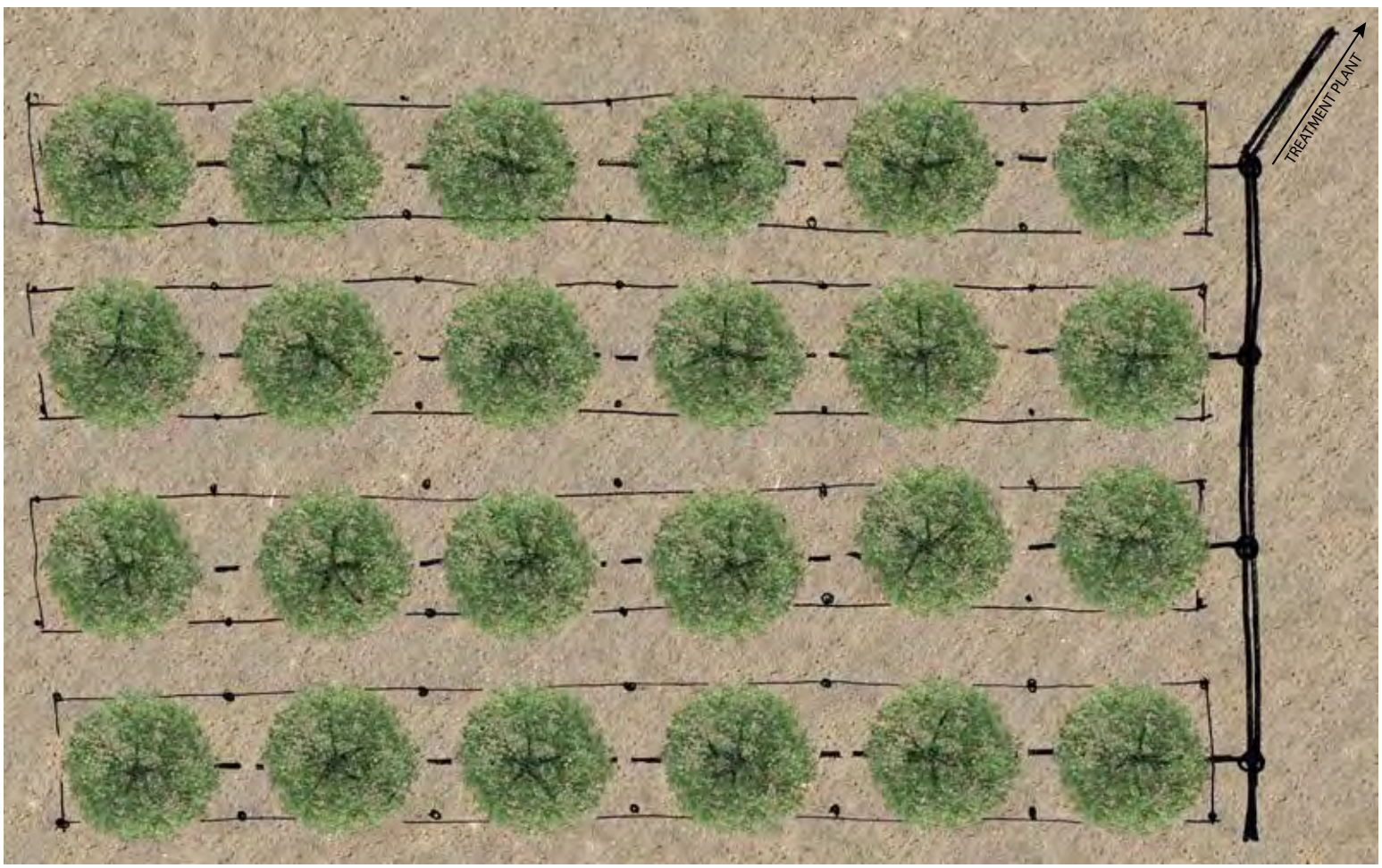
Taking initial ideas picked up from the design outcomes of the charrettes, several key design details and collages are developed here to provide a visual impression.

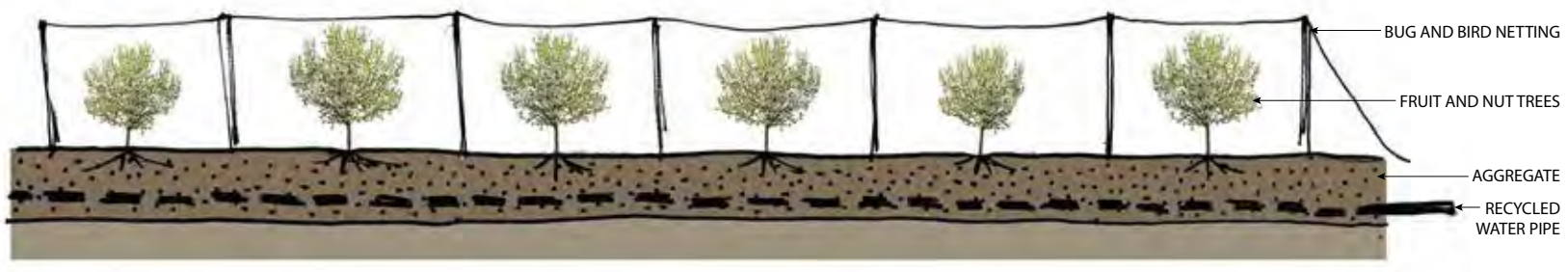
Figure 20. “Bendigo Tower”.

01 balancing food miles and WSUD

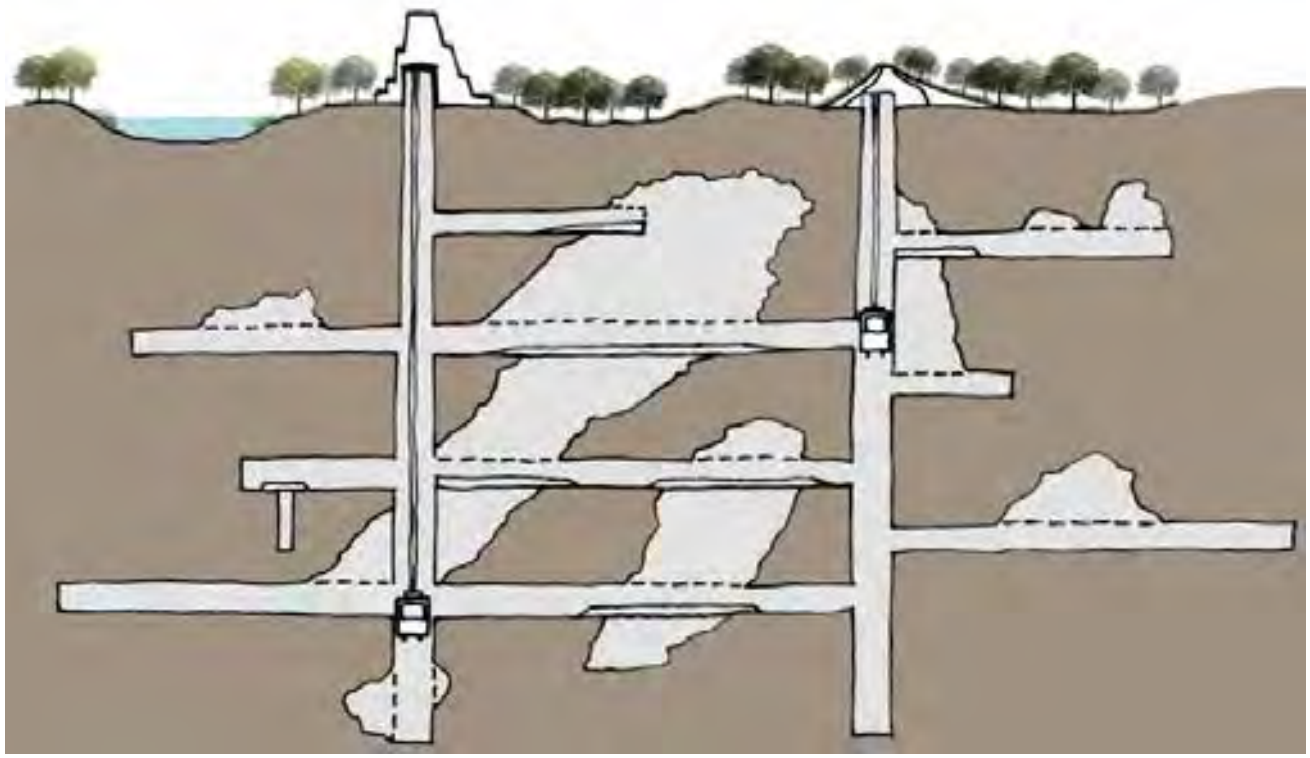


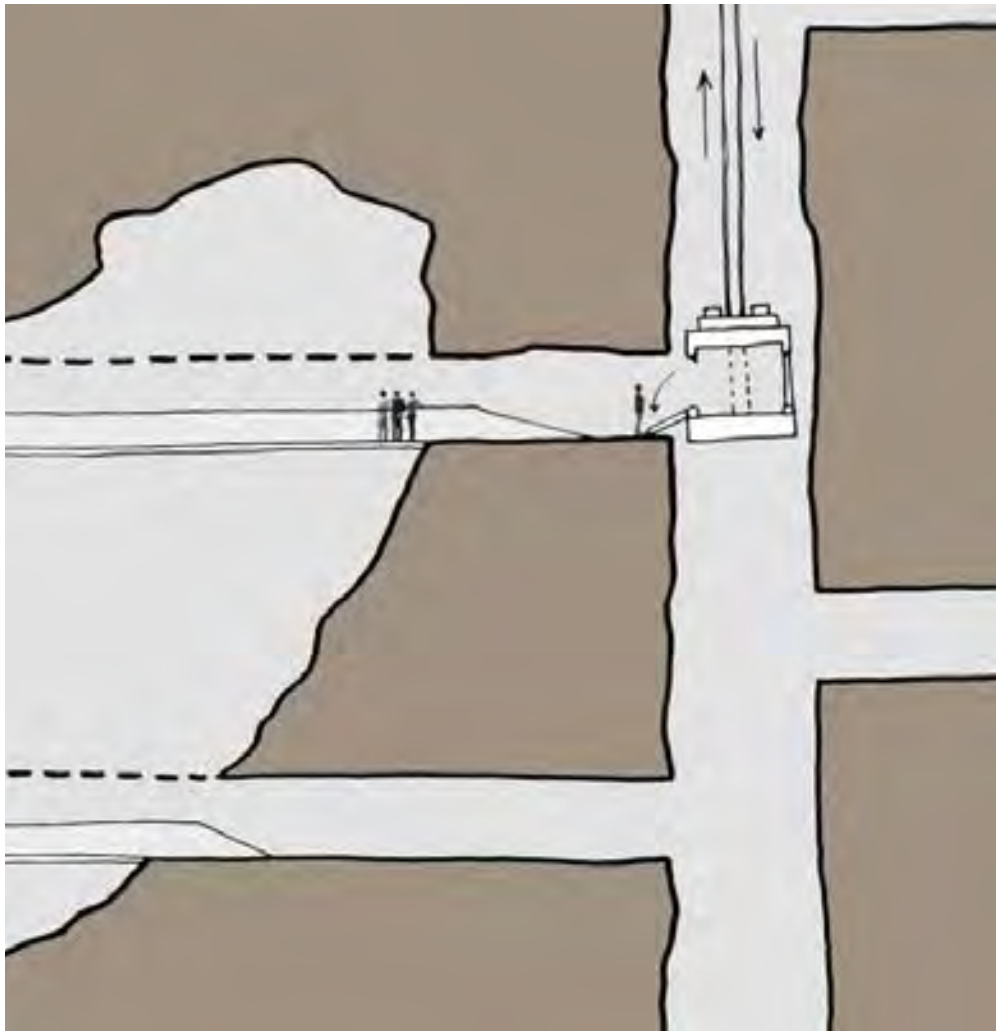



TREATMENT PLANT


BUG AND BIRD NETTING
FRUIT AND NUT TREES
AGGREGATE
RECYCLED
WATER PIPE

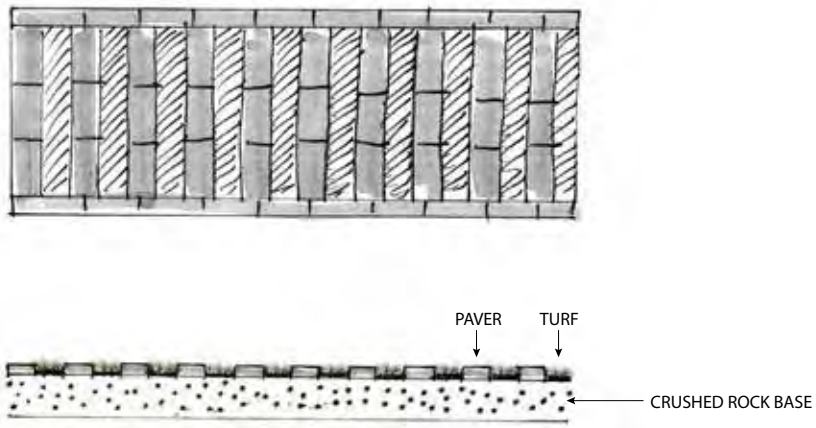
02 cooling using gold mines



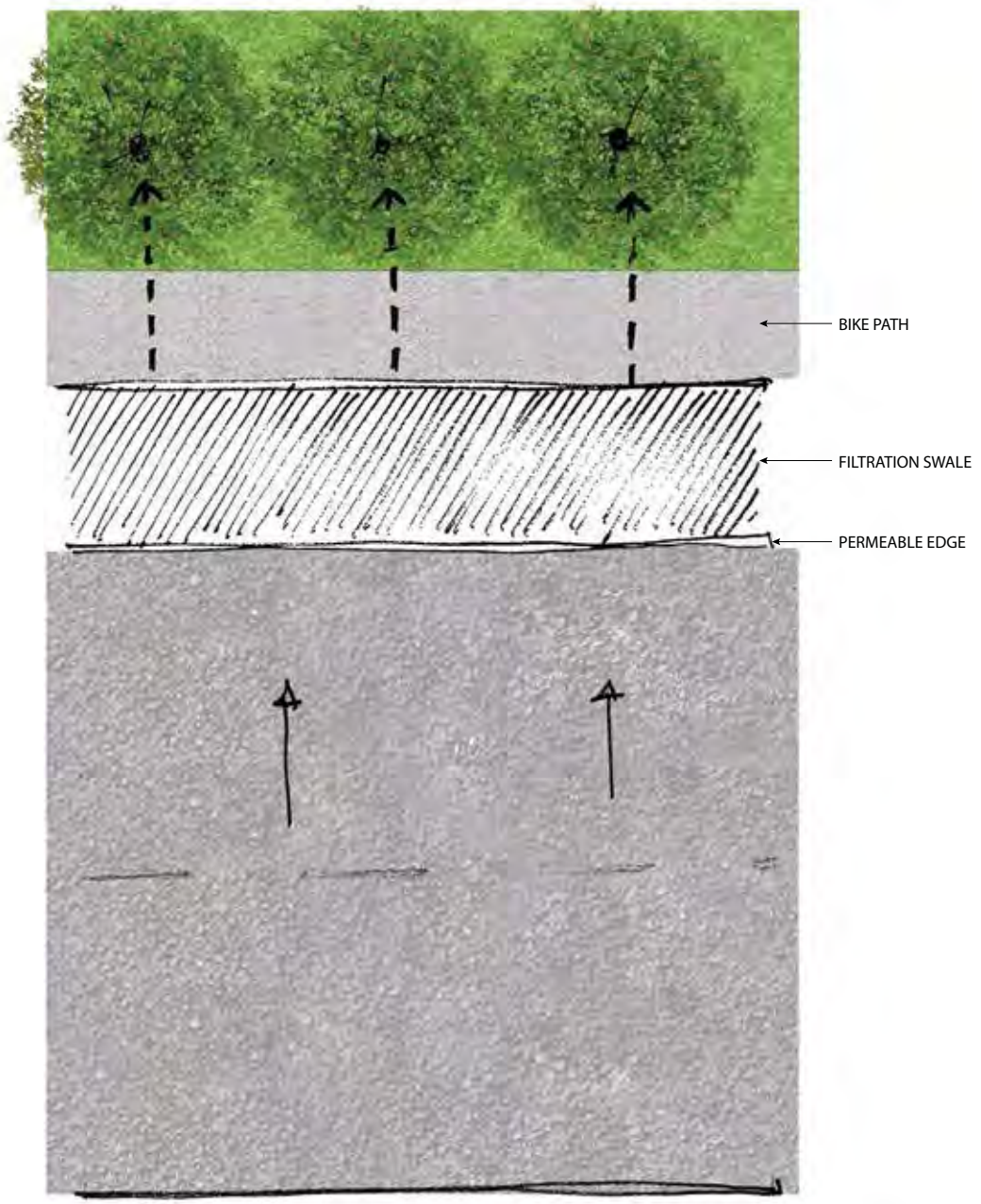


03 typical Water Sensitive Urban Design (WSUD) details

Paving details to facilitate stormwater retention.



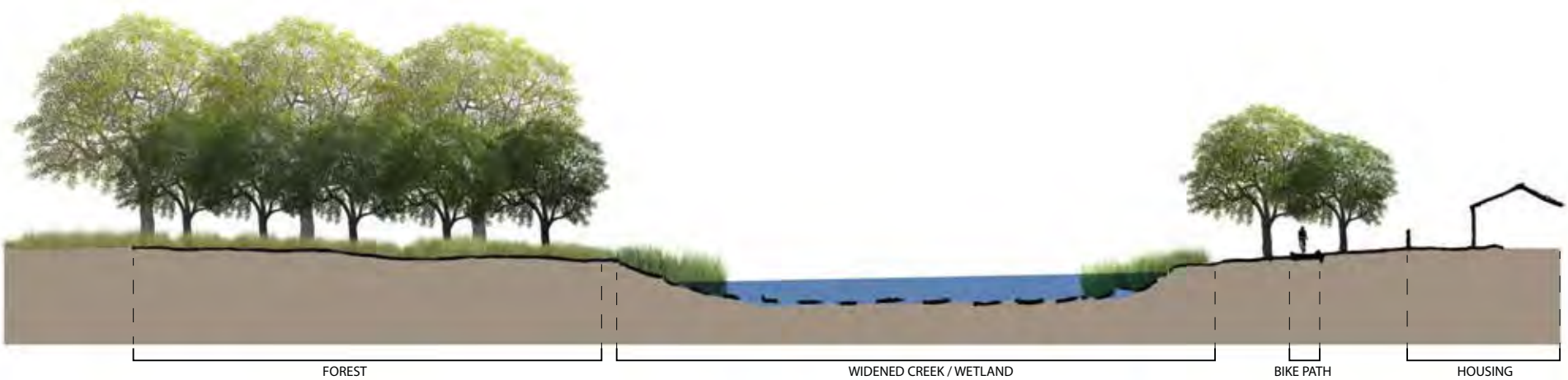
TYPICAL PLAN/ SECTION



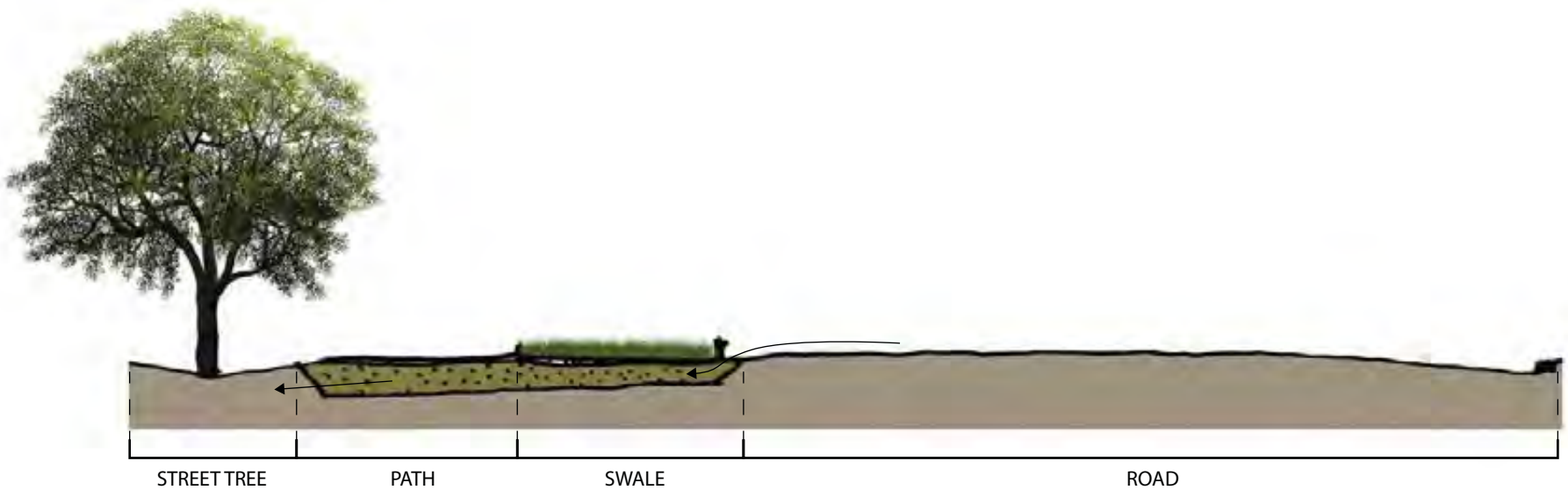
TYPICAL PLAN

04 creek details

Detail of creek control lines as fire and flood buffer, as well as providing recreational open spaces on normal days.

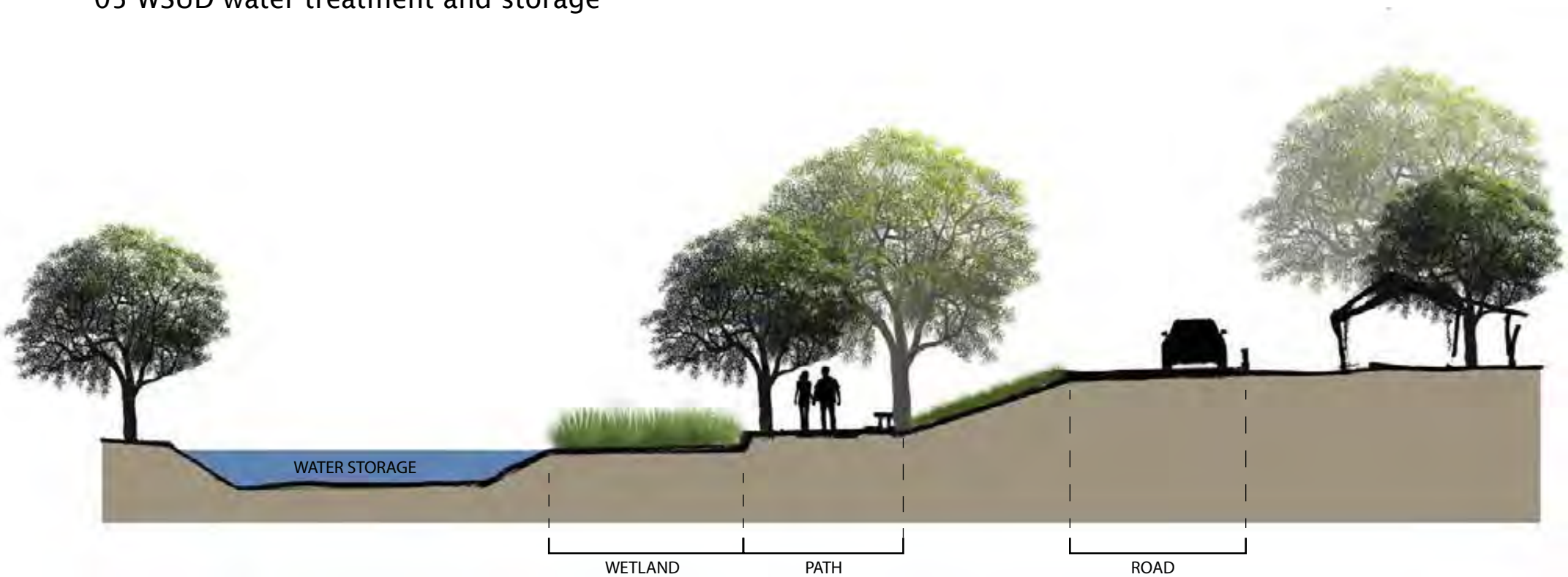


SECTION ACROSS CREEK

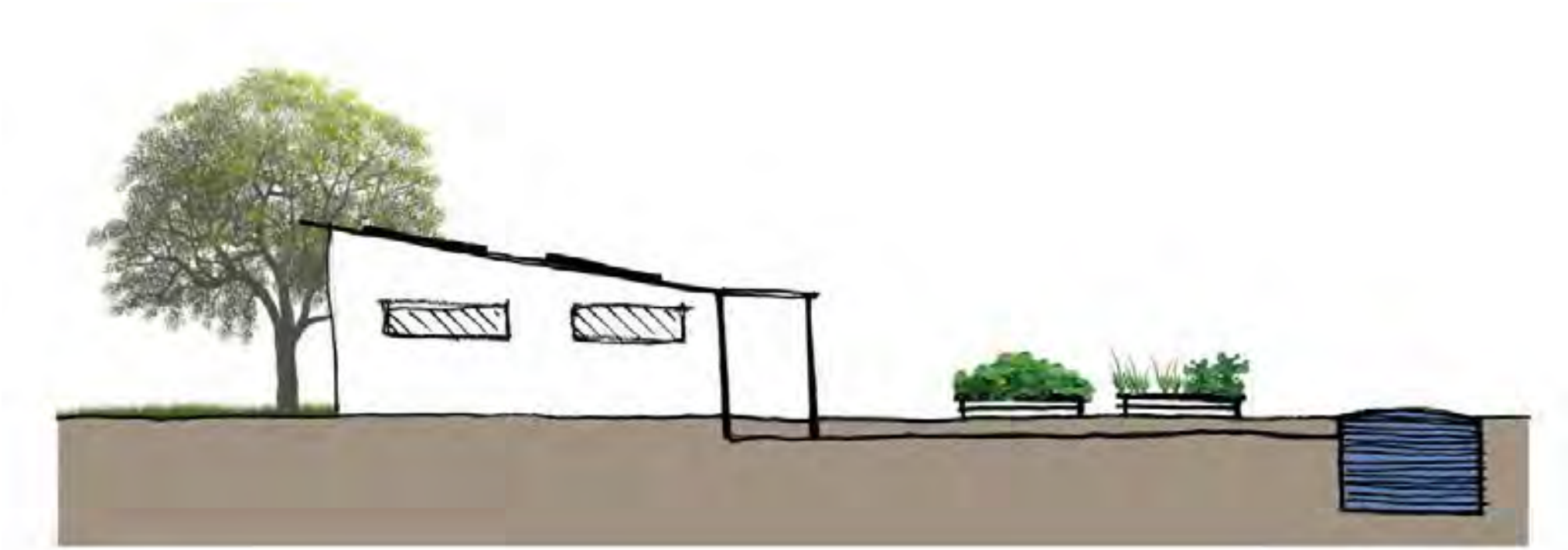


TYPICAL WSUD DETAIL

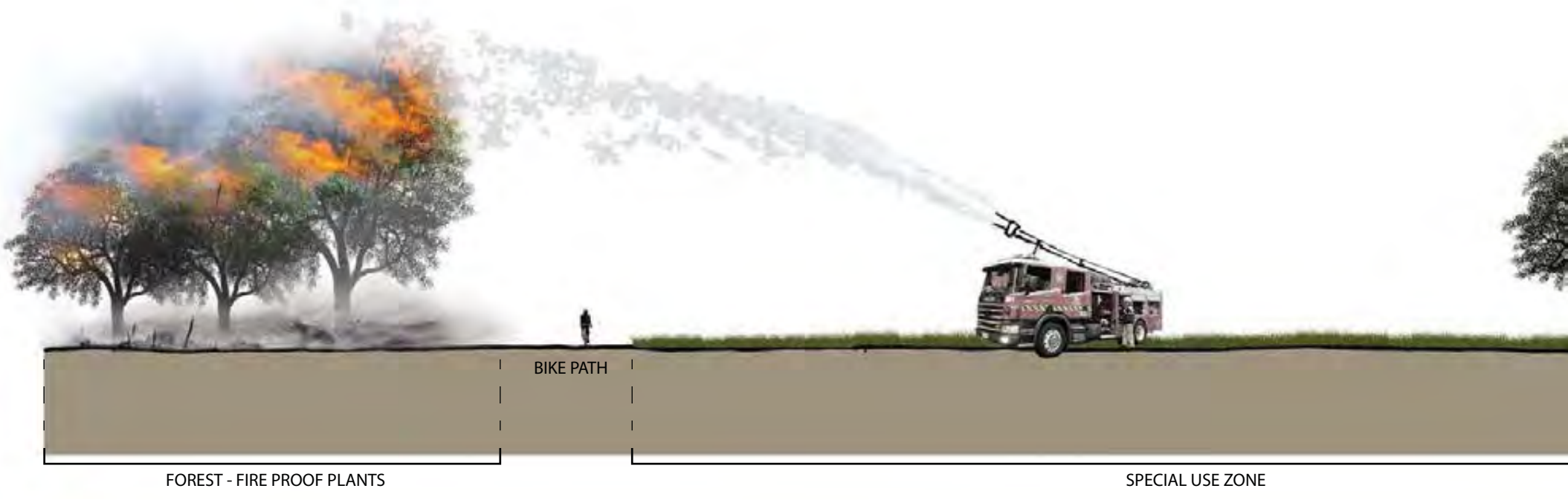
05 WSUD water treatment and storage



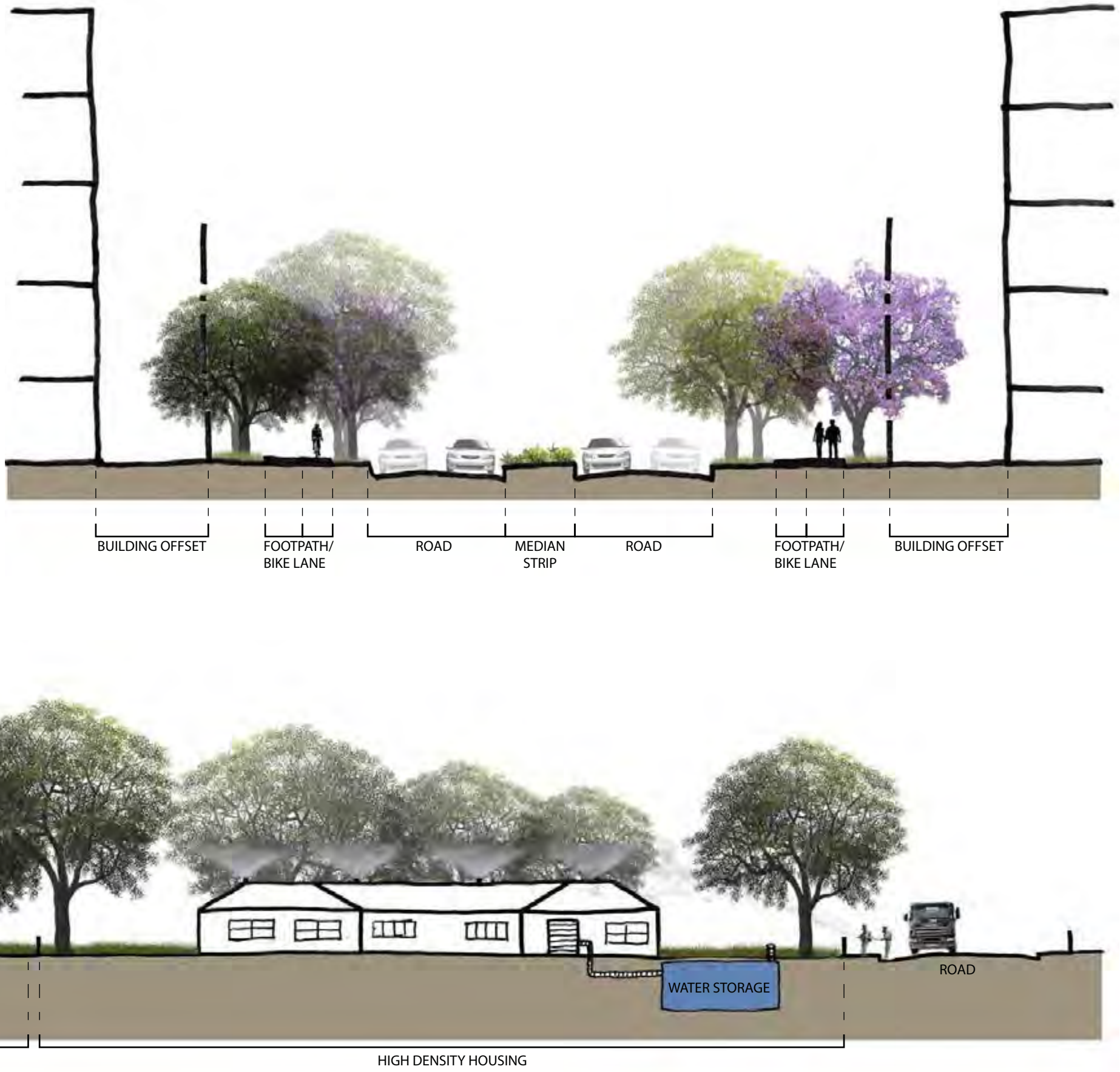
06 self sustainable housing typology



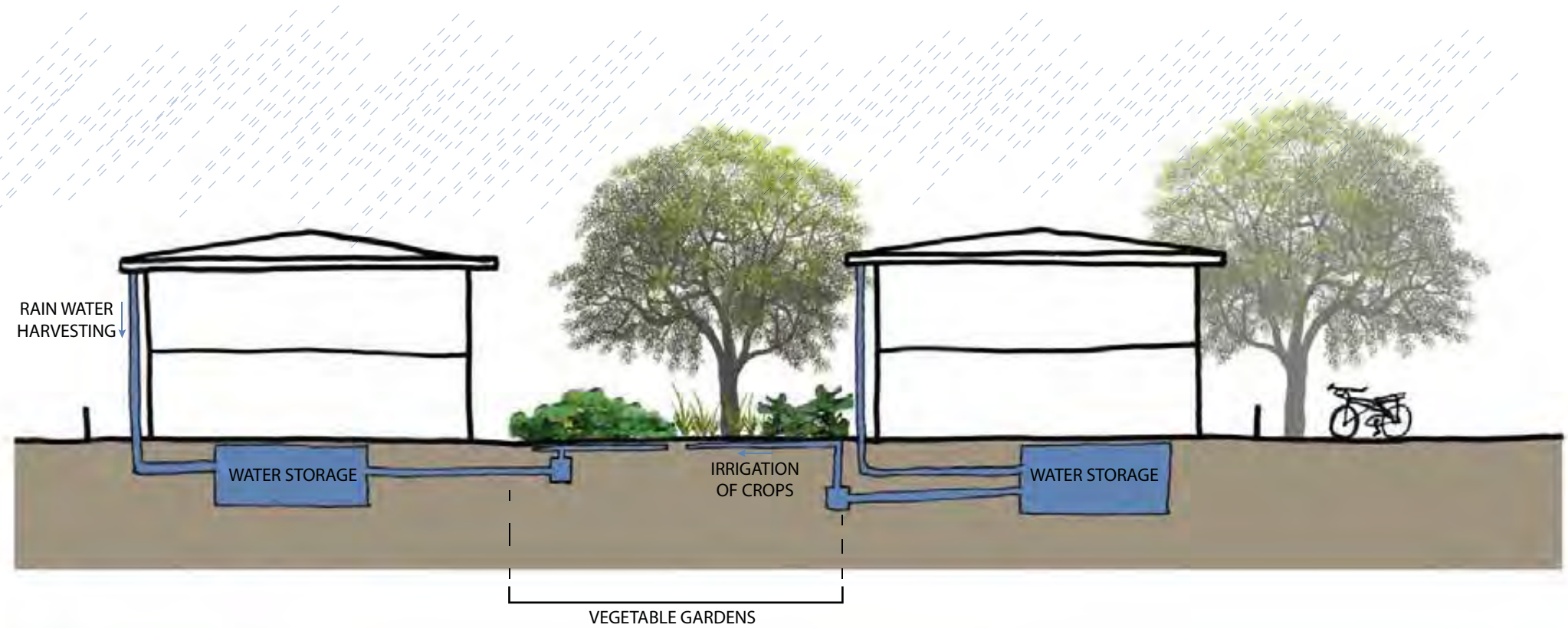
07 life saver housing typology



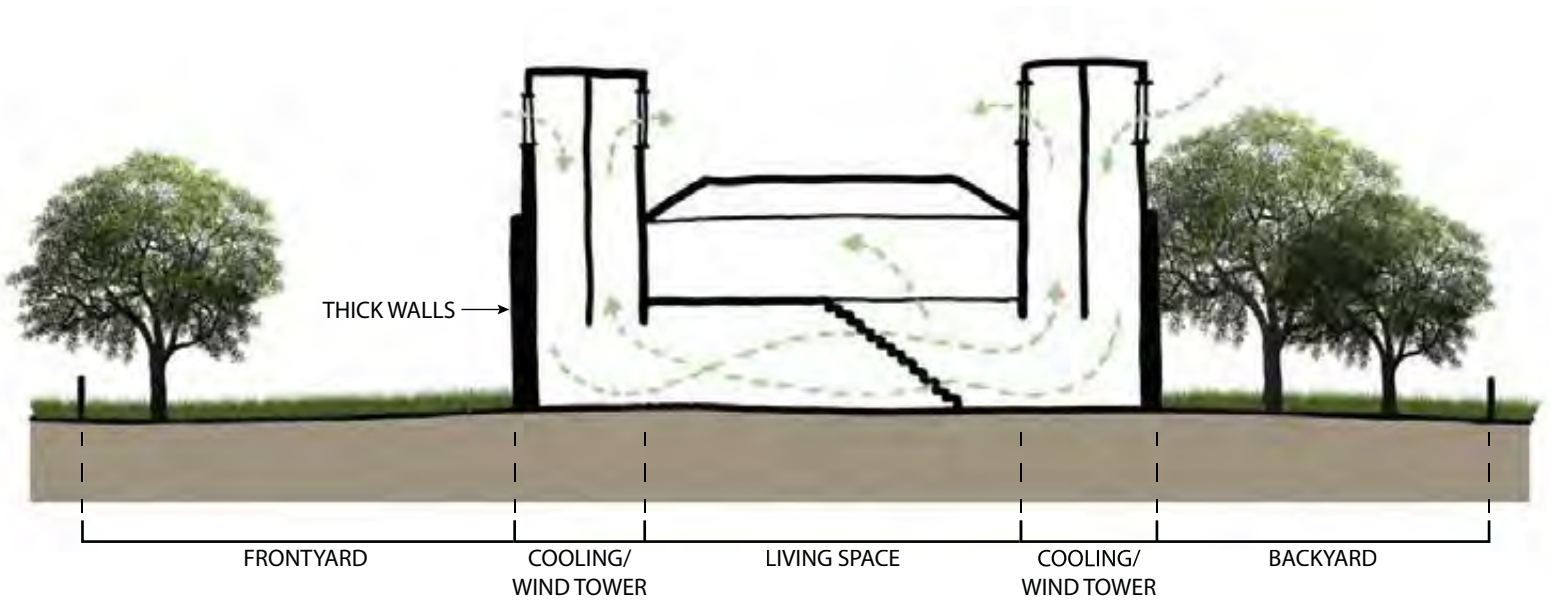
08 pedestrian friendly streetscape



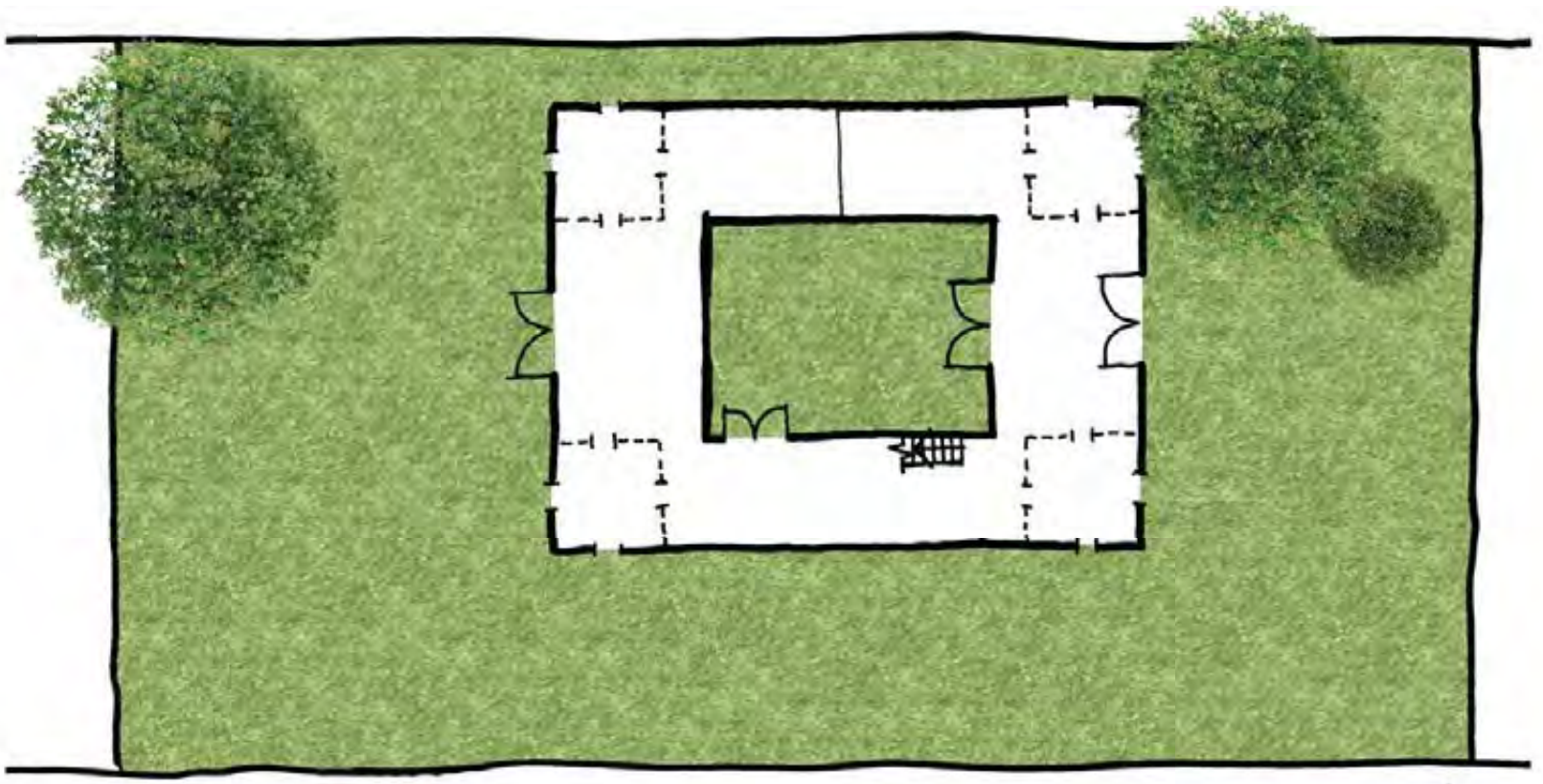
09 shining heart housing typologies



RAIN WATER COLLECTION



WIND TOWER AND COURTYARD HOUSING TYPOLOGY SECTION



WIND TOWER AND COURTYARD HOUSING TYPOLOGY PLAN

10 lake eppalock - adaptive landscape

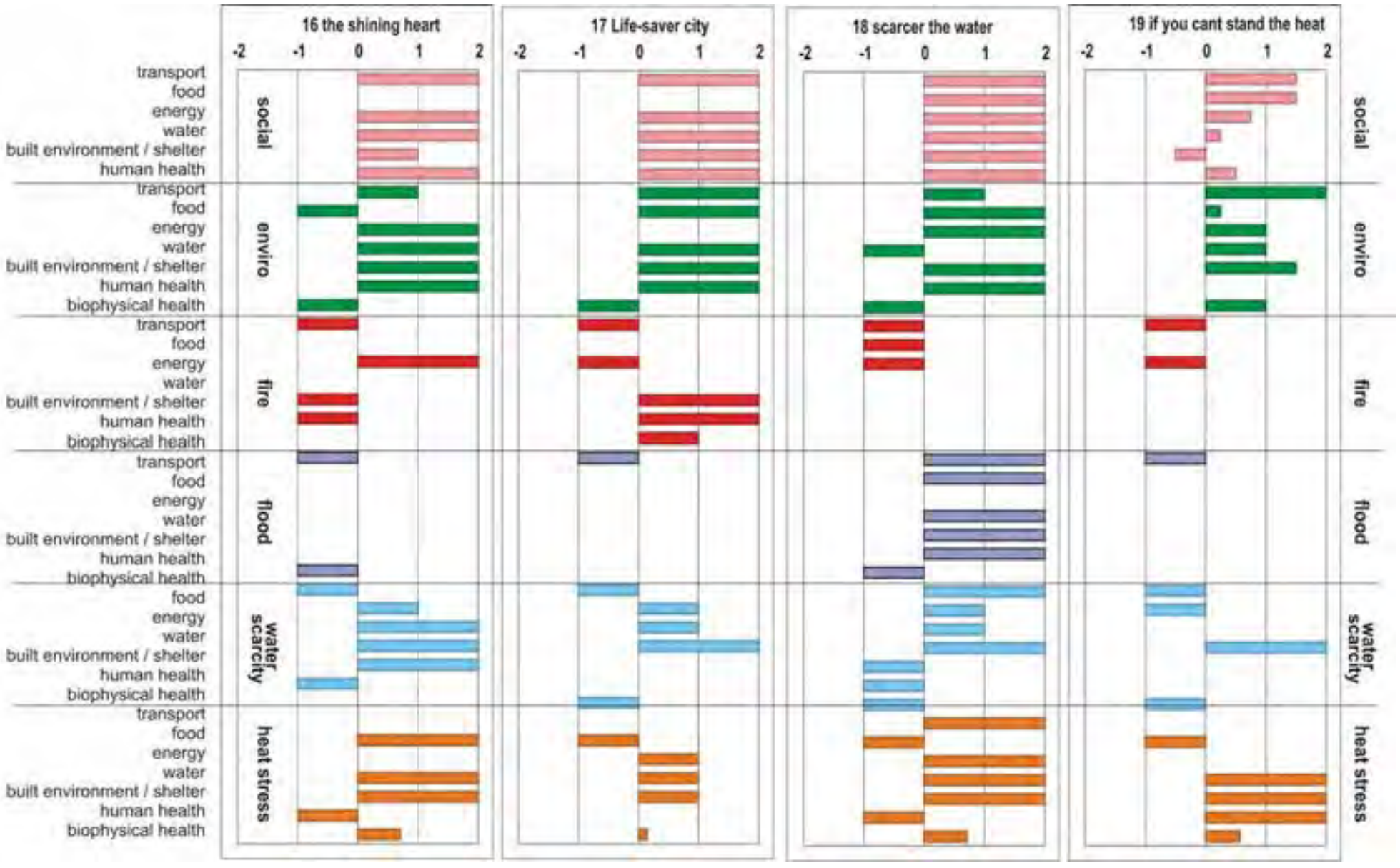
reflections

Change is nothing new. However, the upcoming 40 years will change enormously, in an economic, social and climatic sense. A dramatic shift will take place in economy, as in making use of broadband or transforming towards a knowledge economy. This is not only about inventing new knowledge, but the biggest changes are achieved through the invention of new technologies, consisting of putting intelligently the already existing techniques together. The i-Phone, when it was firstly released, wasn't a completely new technique, but consisted solely of already existing parts. In Bendigo there is a legacy of 150 years of the mining boom. This legacy encapsulates the raison d'être of Bendigo and it also illuminates the tension between obduracy and change. The stronger the elements of obduracy are the more problematic change is experienced. And the next 40 years will appear as decades with huge change. What is needed in this situation is spectacular ideas, a vision with power and boldness, able to react to change and incorporate the strong historical and cultural 'statics' at the same time. Because the strong heritage in Australia of home ownership, with values such as the backyard, the car, and suburbia need to be understood in order to enhance the change that is needed in a convenient way. Is it, also in the light of the realisation of broadband, plausible to expect that commuting decreases and people will cycle and walk more? But, we know we've never stayed the same, the question to be answered is more about how we want Bendigo to change, also in relation to other towns and the way we want the change to happen. Besides elements currently existing in the landscape, such as gravel quarries and water catchment and the question whether they are in the future still affordable (Eppalock?), it also will introduce new elements in the landscape. Climate induced transitions, such as protection against bushfires through removal of the bush need to be taken carefully and not in a way they exacerbate the problem (as the removal of bush is increasing the climate problem). How convenient can we make the transition towards low carbon economies and neighbourhoods, given the nature of each individual community. Some interventions may be easier realisable in certain neighbourhoods and more difficult in others. The question is how do we let this collective, shared process of change to take place? We will have to let new developments to emerge and this will not happen without intervening in everyday life. It might get in the way of what people aspire. Therefore we need to involve people, the government needs to transform in a reflexive variant and needs to collaborate with its citizens in a true and even way. If the government sees its citizens as prosumers, people who contribute as much as they consume, both in terms of products, such as energy, water, but also in the form of ideas, designs and ways to create their environments, then several gaps, between politics and citizens, between climate aims and realisations, between greenfield development and retrofitting or between supply and demand can be solved.

This first charrette allowed us to develop diverging views and visions. In this phase participants were encouraged to use creativity and set aside their preconceptions, in order to develop many different options on maps and by making use of plasticine, which allowed for the construction of physical structures in a very tactile way. This was needed to pull us of the pathway of existing policies and learn (again) to start creative thinking, in term of opportunities instead of constraints. Now we need to select the ideas, design them further, assess them and develop them into project proposals, which are ready for take-up by the market.

appraisal

appraisal



'Concept scoring' appraisal of four concepts
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ISBN: 978 0 7340 4926 1